

# “A Brief History of Manufacturing”

## Recent

### Manufacturing at the Kansas City Plant Facility

- 1942-1945:  
Pratt & Whitney makes 7934 Piston engines for Navy (14,000 parts/engine)
- 1948-1960:  
Westinghouse Aviation Gas Turbines makes over 3000 jet engines for the Navy
- 1948-today:  
Four operating contractors make nuclear weapon components for four US government agencies responsible for US nuclear weapons

## Long Ago

### Example

## Lessons for the Future

Contact: Maurice Smith, 816-997-3590, [msmith@kcp.com](mailto:msmith@kcp.com)  
Principal Engineer, Science-based Design and Manufacturing  
NNSA Kansas City Plant  
Honeywell Federal Manufacturing & Technologies

# Highlights from the History of the Kansas City Plant

## I The Beginning-War II Years:

April 1942-September 2, 1945 The US Navy & Pratt & Whitney Aircraft of Missouri

April 22, 1942

- Decision by US Navy Rear Admiral Pace to select a site for a new plant to expand production of the Pratt & Whitney (P&W of Hartford CN) R-2800 2000 horsepower Double Wasp Radial Aircraft Engine

April 29, 1942

- After a visit to Kansas City, P&W & the Navy decided to build the plant there.

May 15, 1942

- Contracts to design and build the 85 acre (> 3,000,000 sq. ft) plant are nearly complete

July 4, 1942

- Ground-breaking Ceremony (Harry Truman participates)

August 15, 1942

- First Footings poured by Long-Turner Construction Company

February 18, 1943 Production Begins

- First Newsletter to all (soon to be) 21000 Employees of Pratt & Whitney Aircraft of Missouri

August, 1945

- Atomic Bombs dropped on Japan

September 2, 1945 "V-J Day"

- The government closes the Navy's Kansas City Plant, which shipped **7934 R-2800 Series D engines to the US Navy, each engine containing more than 14,000 parts**. All 21,000 employees sent home.

## The Vacant Years:

October 1945 to June 1948:

- Used as a warehouse for War Surplus tires, sugar and other commodities.
- Portions of the facility are leased to small business. Example-"Lingle Refrigeration", owned by Cleo and Doris Lingle (next door neighbors and friends) made walk-in coolers for restaurants.
- In 1947, the IRS leased a small portion to house some of its regional offices.

# Highlights from the History of the Kansas City Plant (Continued)

## II The Westinghouse Years<sup>1</sup>:

### June 1948 through December 1960

#### August 1948

- Navy requests Westinghouse Aircraft Gas Turbine engines of Philadelphia, PA to increase production of its J34 jet engines

#### January 1, 1949

- Westinghouse leases the Kansas City Plant, and tools up to hire employees

#### January 1, 1950

- Westinghouse AGT of Missouri hires about 5000 employees, and begins production of the J34 jet Engine, making 150/month. The first J34 made at the Kansas City Plant is shipped to the Navy.

#### September 1951

- Eighteen months after the decision to move to Kansas City, Westinghouse completes the 3000<sup>th</sup> J34, production is 150 engines/ month, add a new production line to make the J40. The J34 was used largely in trainers, and the many of the Navy's Lockheed Neptune P-2 reconnaissance.

#### 1951-1959

- The United States and the Navy increase their focus on missiles and deterrence, which (combined with competition from GE and a reluctance by Westinghouse management to invest in new technology) led to reductions in orders for the J34 and Westinghouse's follow-on jet engines. Thus begins a steady decline in business for Westinghouse AGT of Missouri and the Kansas City Plant.

#### March 22, 1960

Westinghouse announces plans to closedown their Aircraft Gas Turbine (AGT) engine division.

#### December, 1960

- Westinghouse closes their operations at the Kansas City Plant.

#### Epilogue-1977

- Thirty years after Westinghouse originated the J34 design (17 years after they closed their operations at the Kansas City Plant) more than 40 J34 engines were still in active service in Navy Neptunes, and over 432 J34 engines are still held in stock in Navy depots. The "aging aircraft" problem has been around a long time.

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<sup>1</sup> "The Westinghouse Aviation Gas Turbine Division 1950-1960: A Case Study of the Role of Failure in Technology and Business" Paul D. Lagasse, 1997 Masters Thesis in American History, Master of Library Science, University of Maryland at College Park

# Highlights from the History of the Kansas City Plant (Continued)

## III Part of the United States Nuclear Weapons Complex: The Federal Agencies:

- The Atomic Energy Commission
- Energy Research & Development Agency
- Department of Energy
- National Nuclear Security Administration

## The Operating Contractors:

- Bendix Aviation Corporation, Kansas City Division
- Allied
- AlliedSignal
- Honeywell Federal Manufacturing & Technologies LLC

## 1948 through today

- November 1948  
The Atomic Energy Commission selects the Kansas City Plant to make electrical and mechanical components for nuclear weapons, mission later expands to include rubber and plastic.
- April, 1949  
The Kansas City Plant begins operation.
- April, 1949 to Today  
See the separate Handout

**Pratt & Whitney Aircraft Corporation  
of Missouri  
R-2800 Cylinder head**



# Pratt & Whitney R-2800-C Double Wasp Radial Piston Engines produced at the Kansas City Plant

Engine Name-Model #	Total Produced At KCP	Features	Used on Aircraft	Comments
<b>R-2800-22</b> (US Navy Designation) Built to Navy Specification # N-8081	1104		1. Convair (TBU) TBV-2 2. Fairchild C-82, A 3. Martin XPBM-5, PBM-5 4. Vought XTBU-1	
<b>R-2800-22W</b> (US Navy Designation) Built to Navy Specification # N-8081	387		5. Grumman F7F-2, -2N, -2P 6. Grumman F7F-1N 7. Grumman XF7F-1N 8. Grumman F7F-3	
<b>R-2800-34</b> (US Navy Designation) Built to Navy Specification # N-8081, Appendix A	2082		9. Convair TBV-2 10. Curtiss C-46F 11. Curtiss C-XC46B 12. Fairchild C-82	
<b>R-2800-34WA</b> (US Navy Designation) Built to Navy Specification # N-8081, Appendix A	3104		13. Douglas XA-26D 14. Douglas C-54E 15. Eastern XTBM-5 16. Fleetwings BT(1) 17. Grumman F7F-3N-3P 18. Grumman F7F-4 19. Grumman F8F-1, 1B 20. Grumman XTBF3F-1 21. Martin PBM-5A 22. Martin RM-1 (404) (2) (4)	
<b>R-2800-57</b> (US Air Force Designation) Built to Air Force Specification # N-8088-E	895		23. Northrop P-61D, C 24. Republic XP-47J 25. Republic XP-47L 26. Republic P-47M 27. Republic XP-47N 28. Republic XP-47N	
<b>R-2800-81</b> (US Air Force Designation) Built to Air Force Specification # N-8088-E, Appendix E	362		29. Republic P-47N	Similar to the R-2800-57 above, but had GE cast ignition harness
<b>Total</b>	(3)7934		Bill of material for the single stage engine was released to KCP for production on October 8, 1942	KCP shipped the Navy its first engine in December 1943, + 2744 engines in 1944 + 5274 engines in 1945 through V-J day, when the plant closed.

**Notes:** (1) Manufactured only at the Kansas City Plant, (2) Used the -34A & the -34WA, (3) Total production given on page 141 of "The Pratt & Whitney Aircraft Story" =7931.  
(4) Currently on display at the "Airline History Museum", 201 NW Lou Holland Drive, Kansas City, MO., 64116-4223; 816-421-3401, <http://www.airlinehistorymuseum.com>

From "The R-2800: Pratt & Whitney's Dependable Masterpiece", Graham White ISBN 0-7680-0272-9,  
© Society of Automotive Engineers, Inc., 400 Commonweath Drive, Warrendale, PA 15096-001 USA  
Phone: 724-776-4841, Fax: 724-776-5760, E-mail: [publications@sae.org](mailto:publications@sae.org), <http://www.sae.org>



SAVE A CONNIE, INC.  
**AIRLINE HISTORY MUSEUM**  
 AT KANSAS CITY

Latest News

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▶ **Gift Shop Book Clearance** (06/24/02)

Visit our [Online Gift Shop](#) for huge savings on aviation books! We're clearing out our inventory to make room for new titles. While your looking, don't forget that all proceeds from our Gift Shop sales help to keep our museum operating and our historic aircraft flying. When you purchase from us, YOU are helping to preserve the history of commercial aviation!



▶ **June AHM Video Report - Click Here** (06/09/02)

Watch the latest Airline History Museum news! You will need [RealPlayer](#) to view this file. We'd like to he your comments and suggestions about our monthly video report. Please let us know by visiting our [Feed! Page](#). **NOTICE:** We will not be producing a July video report due to preparations for Oshkosh and Peter Barrett's budding acting career keeping him busy this month. Look for our August news report soon which will hopefully include some Oshkosh footage.

▶ **AHM TV Show Lands a New Time Slot** (04/27/02)

If you're in Kansas City and subscribe to Time Warner or Comcast Cable, you'll be able to see our hour-long TV show FOUR times a week! Through a unique arrangement with the University of Missouri / Kansas City, we will now air our program on Time Warner channel 17, one of the two educational channels controlled by the university, and Comcast channel 25. We will now be seen Monday, Wednesday, Friday, and Saturday between 6PM and 7PM. Currently, the three programs already produced are in rotation. Our intention is to produce many more using the vast archive of historical aviation video and still photos we have accumulated or had donated over the years to promote AHM here in our home town of Kansas City as well as encourage participation in the organization. Naturally in doing so we are also educating people about the rich history propeller-driven commercial aviation in this country.



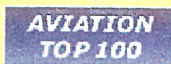
▶ **Museum Now Open 7-Days A Week** (02/27/02)

The Airline History Museum at Kansas City is expanding its hours from 10AM to 4PM Monday through Saturday to include Sunday Noon to 4PM. The museum will now be open seven days a week, commens immediately. Admission to the museum is now \$5 for adults, \$4 for seniors, and \$2 for children.

Aircraft Status (Last Updated July 29, 2002)	In	Out
Lockheed Constellation	●	
Martin 404	●	
Douglas DC-3	●	

We recommend calling 816-421-3401 to verify if aircraft are available for group tours.

Version: 07-20-02





SAVE A CONNIE, INC.  
**AIRLINE HISTORY MUSEUM**  
 AT KANSAS CITY

## Martin 404

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**N145S**  
**"Skyliner Kansas City"**

As part of AHM's goal of acquiring significant propeller driven commercial airliners, a Martin 404 was on a list of desirable aircraft to find. We also knew that this stalwart of 1950's "commuter" aircraft was getting to be almost an impossibility to find, so time was a critical factor. When the opportunity presented itself to find one, we pounced upon it.

There were only 103 Martin 404's built. Eastern Airlines had the largest fleet, 60 of them. These Martin's Eastern Airlines were primarily deployed along their eastern seaboard routes, and in Florida. TWA operated 40 of these planes. Two went to the Coast Guard as VIP transports, and one was used as an electronics bed. Our Martin 404 (serial number 14142) was delivered to Eastern Airlines on February 1952. It flew 1 year for Eastern, and in 1965, it went to Southern Airways where they operated their 404's in the Southern United States and it flew a number of years. After which, much the worse for wear, it was parked.

An entrepreneur in Florida bought N145S, along with 2 other Martin 404's with the thought being to use them to ferry gamblers and vacationers to the Caribbean. However, financial difficulties ultimately sunk this endeavor.

Now with the bank owning N145S, it sat on the ramp in Fort Lauderdale, Florida awaiting its fate. An alert AHM member got wind of it. After 18 months of back and forth negotiations with the bank, AHM took possession of the Martin 404, along with the world's largest collection of spare Martin parts. In 1993, the aircraft was in relatively good shape. After some work and a paint job, "Skyliner Kansas City" is now one of only 3 Martin 404's flying in North America.



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 Website designed and maintained by [Greg Vaughn](#)  
 Best viewed at 800x600 resolution or greater

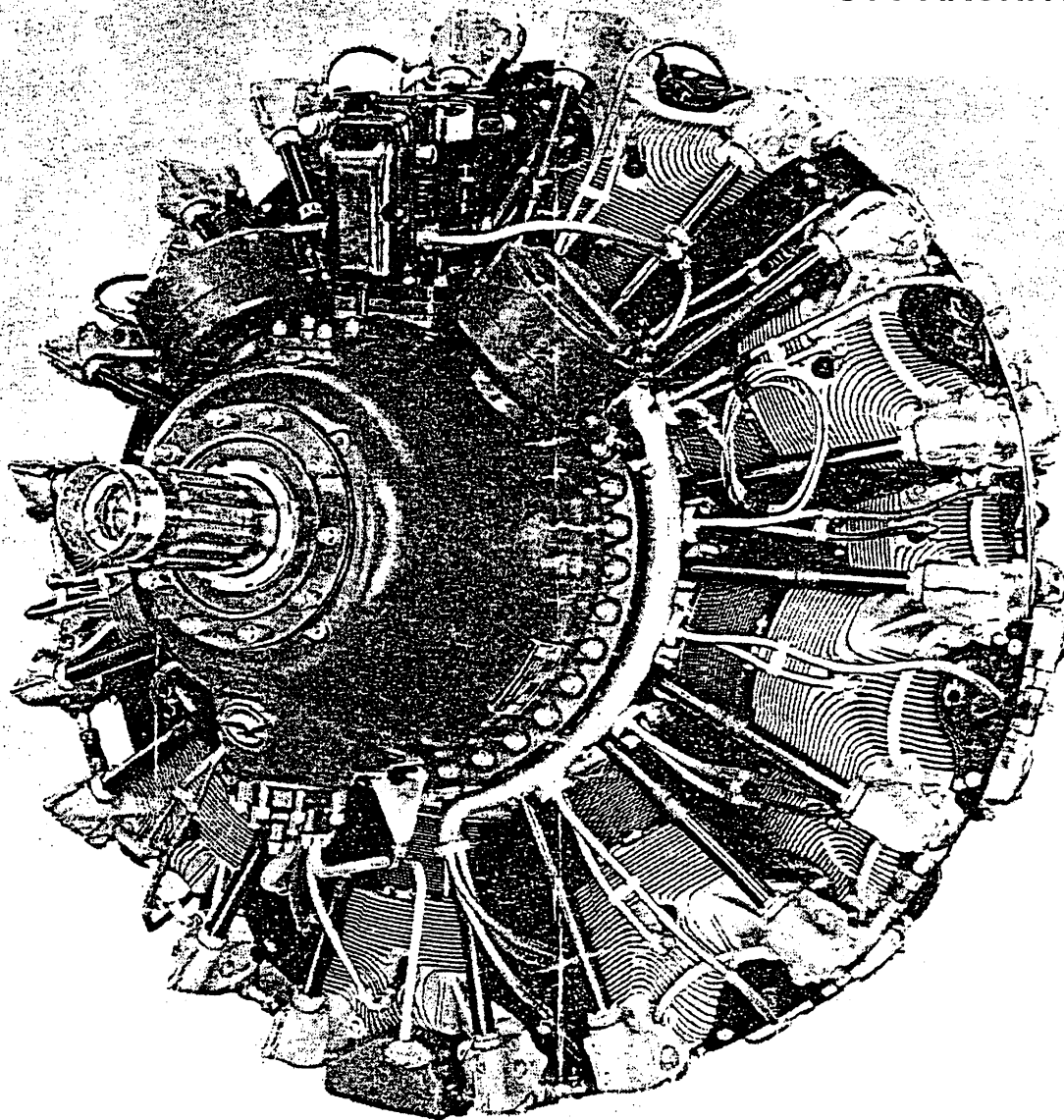




# The Wasp Nest

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UTC ARCHIVES



THE 2,000-HORSEPOWER DOUBLE WASP ENGINE

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PRATT & WHITNEY AIRCRAFT CORPORATION

FEBRUARY

OF MISSOURI

1943

# PRATT & WHITNEY AIRCRAFT

CORPORATION OF MISSOURI

MANUFACTURERS OF

PRATT & WHITNEY AIRCRAFT ENGINES

February 18, 1943


To all employees of  
Pratt & Whitney Aircraft Corporation of Missouri.

This is the first issue of your magazine appropriately called The Wasp Nest. I am proud of this first issue and full credit is given to Paul Fisher, the magazine's editor, who has worked indefatigably to make it of interest to all of you.

The magazine will be published monthly, and it is our wish that you will all get behind it and make it a continued success. We want every issue to reflect your enthusiasm. What we have done in the seven months that have passed is infinitesimal to what faces us in the months to come. Where there are hundreds of us today, there will be as many thousands by fall.

The plant is nearing completion, and I know that you are all looking forward with pride to the time when Double Wasp engines are machined and assembled in our factory, brought to life in our test houses, and go rolling down the railroad spur destined to power airplanes bound for combat zones.

I thank you for the loyalty, energy, and aggressiveness displayed by all of you, which makes it possible to tackle a problem that might in ordinary times appear insurmountable. With your continued cooperation, the success of Pratt & Whitney Aircraft Corporation of Missouri is assured.

A handwritten signature in cursive script, appearing to read "J. H. Dawson". The signature is written in dark ink and is positioned at the bottom right of the page.

## THE FIRST SEVEN DAYS

ONE OF THE cushions of confidence upon which A. Schickelgruber and his satellites relied was the positive notion that the United States moved with a painful lethargy. To be sure, there have been times when this nation has. But for sheer speed and quick decisions, consider this—

On the morning of April 22, 1942, a conference was held in the office of Rear Admiral E. M. Pace of the Bureau of Aeronautics, at the request of Captain Paul E. Pihl, of the Bureau's production engineering branch. The Pratt and Whitney Aircraft division of the United Aircraft Corporation had been seeking unsuccessfully for two months to increase the production of the 2,000-horsepower Double Wasp engines through its licensees. For four

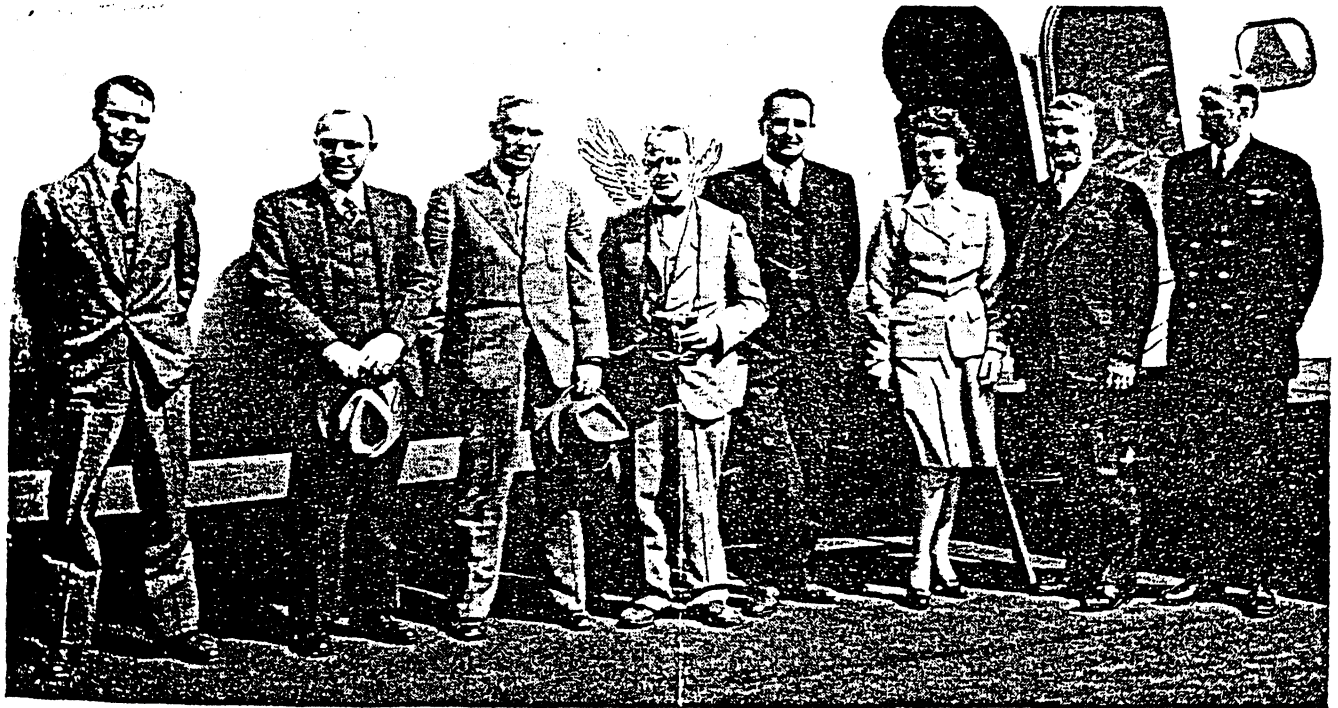
hours the matter was debated; presently naval officials came to a decision.

That order came in the early afternoon of April 22. At that moment the Bureau, the aircraft section of the War Production Board, and Mr. Horner had the unlimited expanse of the United States from which to choose a site. There is no record that any of them had ever heard of a village outside Kansas City called Dodson, or a tract of land known as the old Speedway.

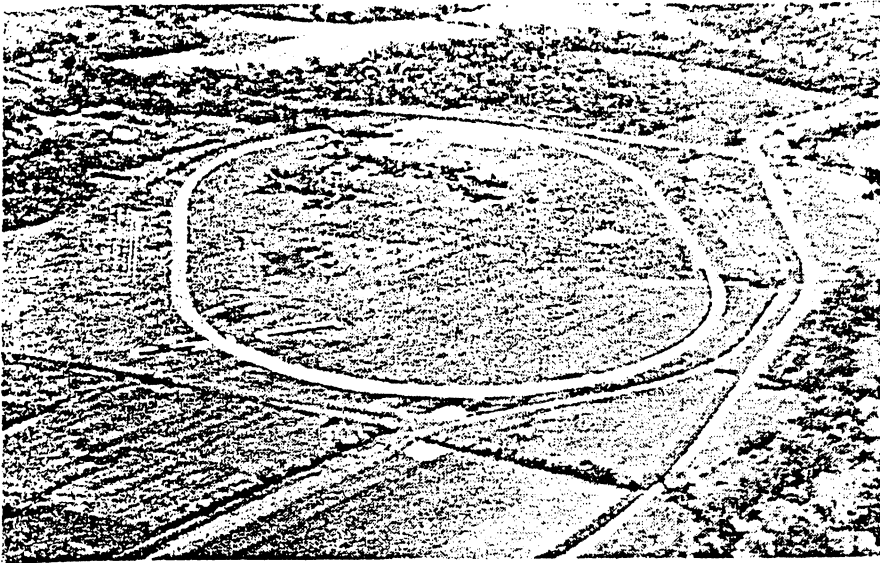
Yet six days and a few hours after the conferees disbanded, the plant site of the Pratt and Whitney Aircraft Corporation of Missouri had been chosen. The necessary facilities such as the availability of water, electricity, transportation, manpower, and hous-

ing, had been canvassed. Moreover, both the Bureau and the aircraft section of the WPB had men present at the site to offer concurrence as to its suitability.

It is a curious story, the selection of a home for an aircraft engine plant outside a city once devoted to beef and grain and railroads. ~~How it was chosen never has been told heretofore.~~ As Mr. Horner recalls, he felt no time should be wasted now that the Bureau and the WPB had decided upon a new plant. He persuaded Captain Pihl that one of his officers, Comdr. Louis Marshall, should accompany the searching expedition; and Captain Pihl also arranged for H. R. Boyer, of the aircraft section of the WPB, to join the group.



*Their visit presaged the birth of the mammoth Pratt and Whitney Aircraft plant in Missouri. Headed by H. Mansfield Horner, general manager of the Pratt and Whitney division of United Aircraft, these men discovered and decided upon the Kansas City site within fifty-six hours. They are, left to right, Jules Girardet, co-pilot of the United Aircraft's plane; Henry Sturtevant, plant engineer; B. L. Whelan, pilot and general manager of the United Airports division; C. L. Burns, assistant to the general manager; Mr. Horner; Mrs. Horner; G. H. D. Miller, factory manager of Pratt and Whitney Aircraft in East Hartford, and Lt. Comdr. Louis Marshall, USNR.*



*"While the plot was rather hard to visualize from the hill, from the air it stood out like a bowl—to us, a great big, beautiful bowl," Mr. Horner said. Contrast this pastoral scene with the view below.*

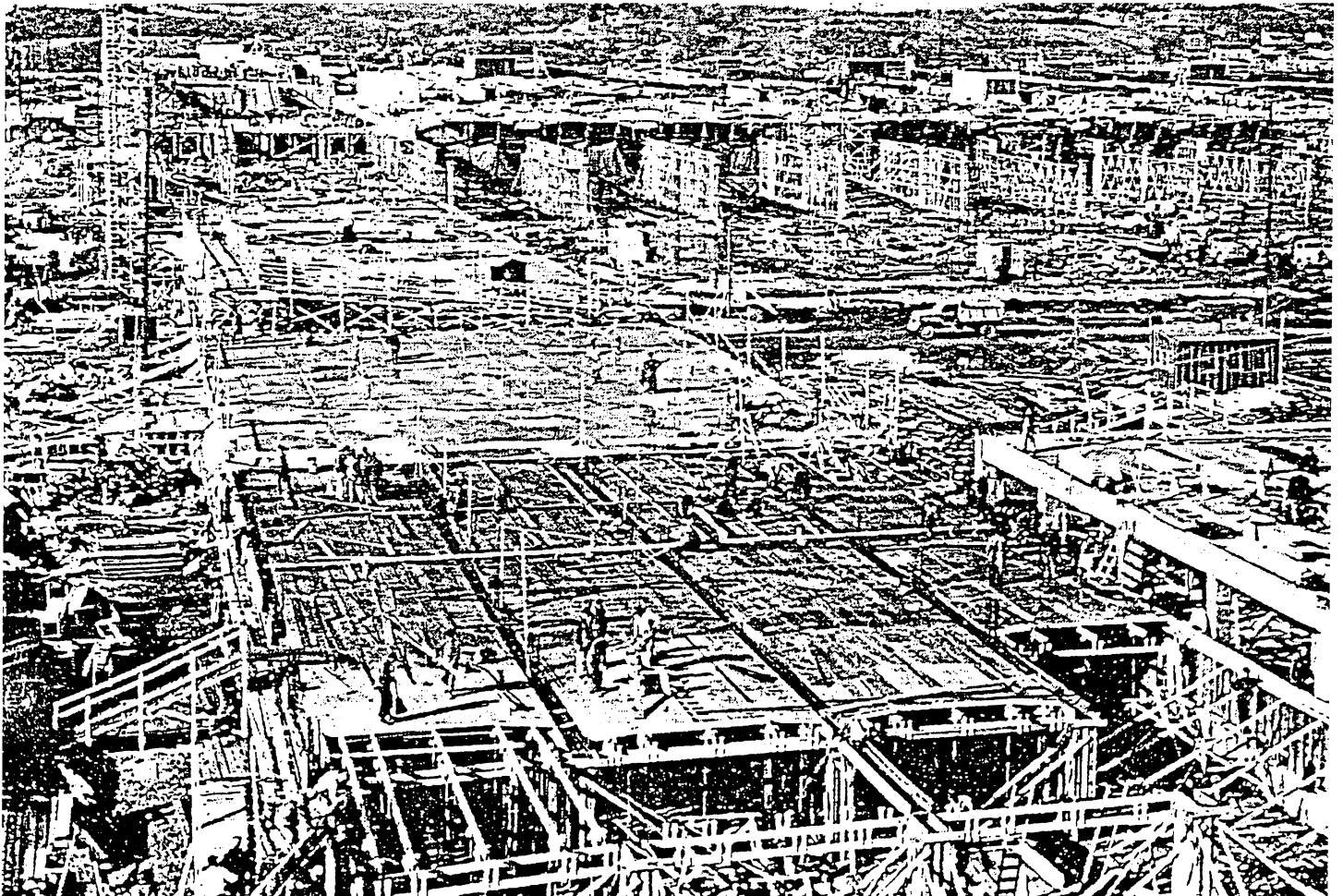
Mr. Horner, Commander Marshall, and Mr. Boyer, cut away a lot of unnecessary steps by consulting with

the Plant Sites Board of the WPB. There they learned that, based upon the availability of labor, electricity,

manpower, and other factors, three municipal areas offered the most promise. The Board recommended in order Kansas City, the Twin Cities, and St. Louis, for a factory the mammoth size of the projected engine plant.

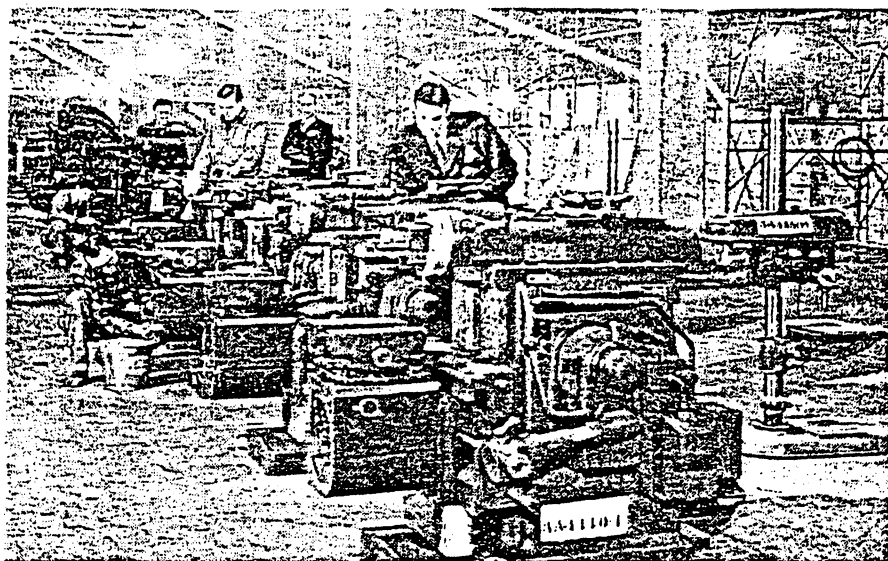
The meeting had been on a Wednesday. Mr. Horner immediately made arrangements to obtain United Aircraft's transport plane, and informed the men of his organization, as well as Commander Marshall and Mr. Boyer, that they would take off from Hartford on Sunday, April 26. With him were George Miller, factory manager; Charles Burns, his assistant in charge of all plant construction; H. S. Sturtevant, who is Mr. Burns' assistant on buildings; and, of course, United Aircraft's veteran pilot, B. L. Whelan, and the co-pilot, Jules Girardet. Since Mrs. Horner has relatives in Kansas City, she joined the group. (Incidentally, Mr. Horner saw her only once

*The Pratt and Whitney Aircraft plant in Missouri as it stands today. More than one million feet of office and floor space already is under roof. With eighty-five per cent of floor already*



in the fifty-six hours he spent in Kansas City.)

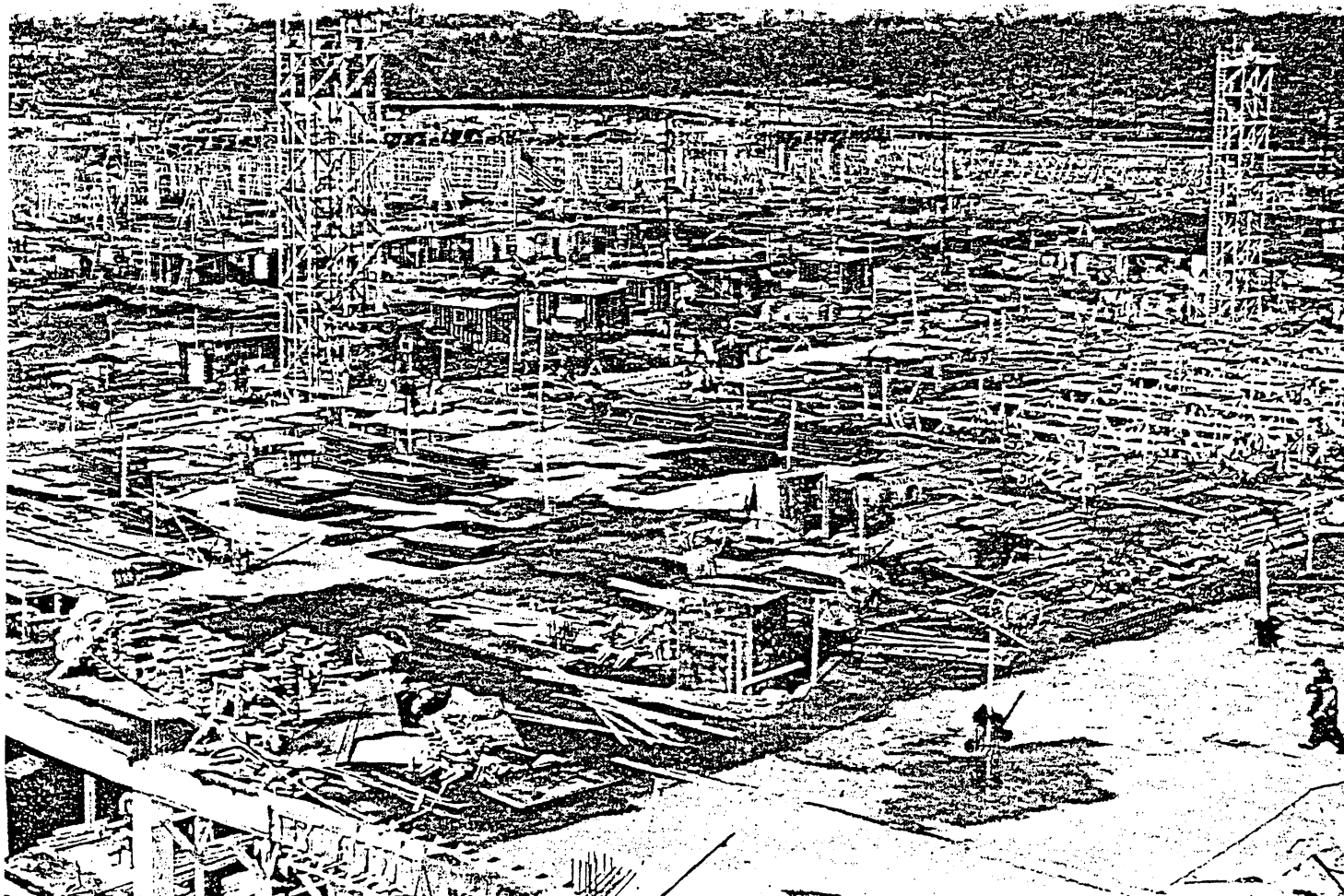
Commander Marshall had spent Saturday night in Hartford with Mr. Horner, and it had been arranged to pick up Mr. Boyer in Detroit. After staying Sunday night in Detroit, the group left early Monday morning; and after flying through considerable thick weather, they reached Kansas City shortly after noon on Monday. They were surprised, and at the moment somewhat perturbed, to discover that Mayor John B. Gage; Arthur C. Everham, Director of Public Works; and Robert L. Mehornay, were at the airport to meet them. Mr. Mehornay had worked very closely with Mr. Boyer while they were joint members of the War Production Board, but all arrangements for the trip had been conducted very secretly, since neither the Bureau, the War Production Board, nor the United Aircraft Corporation, wanted any publicity until they to-



Shipments of machine tools now are arriving daily, with installation following the construction workers as they move on, another completed section of the plant behind them. Here a row of shapers are checked and cleaned after delivery.

gether had settled on a site and had the destination when he left Hartford. obtained options on the land. Indeed, When he discovered it was Kansas even co-pilot Girardet was unaware of City, he was overjoyed, for this was

secured, all factory excavation completed, the mobile form construction method permits an advance forward by eighty feet every seven days the entire 1,000-foot width of the factory.



This was on Tuesday afternoon, April 28. Mr. Horner broke his group into various units to consult with city officials and utility men regarding water, electricity, and other manufacturing necessities. Meantime, accompanied by Mr. Boyer and Commander Marshall, he went on with his survey of the surrounding territory. Before they had finished, the men had looked at every possible site 360 degrees around the city hall, and extending out for approximately 20 miles. As a matter of fact, a second site was discovered across the Kansas River in Kansas City, Kansas. This site, they felt, however, presented a serious problem in getting workmen to and from a projected plant, since its transportation facilities and roads were somewhat meager.

"Again we worked late into the night," Mr. Horner recalled, "studying the possible pros and cons of the Holmes and Bannister site, but it was a much happier bunch that night, and we all now realize how terribly discouraged we had been the night before. By Wednesday noon, we had all agreed that the racetrack site had just about everything we wanted and we decided we could check out the next morning.

"It was a great help to us to have Commander Marshall and Mr. Boyer along, as with their concurrence in our decision we were much better able to obtain the necessary Washington approvals. Aside from this angle, both of these men were of real help in lining up the various factors, making this decision possible.

"We left Kansas City Thursday morning and by the second week in May, we were really getting along with the necessary contractual arrangements with the DPC to permit us to get going with the purchase of land, and so forth. As a matter of fact, we even jumped the gun on this paper work and started picking up options immediately. Mr. Langworthy and Mr. Mehornay worked like



*One of the integral problems that concerned the United Aircraft Corporation when its management first envisaged the Pratt and Whitney Aircraft plant in Kansas City was a means of schooling future workers. The training school in East Hartford, set up by H. C. O'Sullivan, served as a model for the Kansas City school, the largest training center for aircraft engine students in the nation. Here is the lathe section of the school, already producing parts for the factory.*

slaves in helping us get this part of our work started.

"Considering all that had to be done, I think it was remarkable that we were able to break ground on July meant a tremendous architectural job and much credit is due Albert Kahn Associated Architects and Engineers for their swift performance in preparing these plans."

Thus, on April 29, the choice had been made. On July 4, the ground was broken, and on August 15, the Long Turner Construction Company had sunk the first footing. Now, six months later, eighty-five per cent of the floor of the mammoth plant has been poured, and sixty per cent of the arched forms for the roof have been completed. More than one million square feet of floor space is under roof, and installations, flooring blocks, and other facilities are following behind the progress of the mass con-

struction units utilized to build the plant. Already, the half million cubic yards of excavation necessary in the factory and administration building have been removed, and only the excavation needed at subsidiary stations outside the factory remained to be done. After weather with temperatures that sunk to 13 degrees below zero and footing on the convex roofs had been extremely dangerous because of ice and snow, a period of mild, spring-like weather had set in. In fourteen days thereafter, the plant moved 160 feet forward along its entire width. Scores of machine tools were running; military reasons preclude giving their number. Beginning late in January, 125 tons of machine tools were delivered daily to the Pratt and Whitney Aircraft of Missouri plant. This average, engineers said, would continue throughout the month.

Thus the first seven days.

## *A Message from* FREDERICK B. RENTSCHLER

*Chairman of the Board of United Aircraft Corporation*

When we founded Pratt and Whitney Aircraft seventeen years ago, we had a vision of what the future might hold for the aviation industry and for our little concern. We also had faith that we were on the right track; but all that vision and that faith could not reveal to us the view of what Pratt and Whitney would be in 1943.

True it was that we expected to expand and grow. Had we not believed that, we never should have struck out for ourselves in 1925 to design and construct a 400-horsepower air-cooled aircraft engine for Navy test. When the first Wasps passed the Navy test and we received an order for 200 engines, we knew we were on the way. At that time, we began our first expansion, and by 1929, had outgrown our leased space and had moved into our own new plant in East Hartford.

Through the years from 1929 to 1940, we continued to build engines of ever-increasing horsepower. Our engineering and research staff devoted long hours and countless dollars to the development and perfection of the radial air-cooled engine. Our factory staff devoted its thoughts and energies to improving technique.

From the beginning, we knew that Pratt and Whitney Aircraft had two major responsibilities to our country: The development of a superior type of aircraft engine, and the ability to put that engine rapidly into large-scale production when the inevitable emergency arose. To date, we have met this responsibility in a way of which we are all proud. We believe that Pratt and Whitney Aircraft engines are the best in the world. We

are ahead of schedule on delivery; and plant facilities have been expanded many times. Six licensees—Ford, Buick, Chevrolet, Nash-Kelvinator, Jacobs, and Continental—have added to the output of our engines; and now this new plant in Kansas City, with approximately the same floor space as the present plant in East Hartford, is being rushed to completion. Certainly, all the vision and faith and expectation we had in 1925 did not include this great step.

It is my hope that the *Wasp Nest* will be able to chronicle for Pratt and Whitney Aircraft Corporation of Missouri a record of which we can all be proud. We are confident that it will; otherwise, we would never have come to Kansas City.

—FREDERICK B. RENTSCHLER.

## *Greetings from* EUGENE E. WILSON

*President of United Aircraft Corporation*

Pratt and Whitney Aircraft had its beginning at East Hartford, because its founders knew that there they would find the skilled craftsmen who are so necessary in building the finest precision instrument in the world—the airplane engine. Not only were the men in that area skilled in their trade, but they were artists in that they could and did create the new tools, jigs, and fixtures which were needed in pioneering the Wasp air-cooled radial engine. Thus, again, they demonstrated the Yankee ingenuity for which that section of the nation is famed.

The first issue of the *Wasp Nest* heralds the fast approaching opening of another Pratt & Whitney Aircraft plant—a plant rivalling in size the

one at East Hartford. But it is not to be staffed with Yankee artisans. There simply aren't enough of them to go around in this war time, even at East Hartford. Hence, you people who man this new plant will have to throw into the breach your far famed mid-western initiative to offset comparable Yankee ingenuity.

Several hundred of you have been in training at East Hartford obtaining from our craftsmen all the knowledge which can be passed from one man to another. Today hundreds of you already are in training in Kansas City, the vanguard of thousands who will be schooled there, learning from your Western neighbors who already have studied in Connecticut.

But this knowledge passed on from

Yankee craftsmen to selected personnel from the Kansas City area and from these on to the thousands of trainees will not alone be sufficient. It must be supplemented by your initiative, your fullest cooperation, your overwhelming desire to do your utmost until the job is done.

You have been entrusted with a great tradition—the Pratt & Whitney tradition of building dependable engines. But beyond that, you have a grave responsibility to the nation. These—your engines—are desperately needed by our armed forces. They must run out from Kansas City in a mighty stream if we are to win this war. I know that you will do the job.

—EUGENE E. WILSON.





J. Reed Miller, J. F. McCarthy and Peter Lynch.

Installation of the first machine tools in the factory coincided with the January visit to the Kansas City Pratt and Whitney Aircraft plant of J. Reed Miller, vice-president of the United Aircraft Corporation; J. F. McCarthy, controller of United Aircraft and Peter Lynch, of Allen, R. Smart and Company, auditors for the United

Aircraft Corporation. Both Mr. McCarthy and Mr. Miller are officials of the Missouri division, Mr. McCarthy as controller and a director, Mr. Miller as vice-president and a director. They first saw the plant site seven months before this visit as the old Kansas City speedway.

### COMMANDER SMITH TAKES OVER AIRCRAFT INSPECTION POST

The bureau of aeronautics recently assigned Lieut. Comdr. C. E. Smith to

the post of inspector of Naval Aircraft for the Pratt and Whitney Aircraft Corporation of Missouri. Prior to the assignment, Commander Smith had served a year as senior assistant to Comdr. R. M. Oliver, inspector of Naval Aircraft at the parent engine plant in East Hartford.

A native of Ohio, Commander Smith was graduated from the United States Naval Academy at Annapolis in 1921. After serving on the U. S. S. Wyoming and the U. S. S. Lawrence as engineering officer, he was assigned to the staff of Rear Admiral Mark L. Bristol, United States High Commissioner to Turkey. He was based in Constantinople a year, then transferred to the U. S. S. Reid in 1924. He entered a private business in Philadelphia in 1925. Immediately after Pearl Harbor, Commander Smith was recalled to service.



Lieut. Comdr. C. E. Smith.

### Admiral H. G. Taylor

From a point in the Blue River Hills overlooking the plant site, Rear Admiral H. G. Taylor, naval superintending engineer for this 13-state area, recently began his first inspection tour of the Pratt & Whitney Aircraft plant. He viewed from this point the entire area of the site, and noted the progress which had been made on the buildings. "It's an eye opener," Admiral Taylor said.

Descending to the plant, Admiral Taylor examined the construction work in greater detail, expressing especial interest in and approbation of the movable form construction method being used. Later, he watched the installation of the first production machinery, and visited the offices in the administration building, which was being made ready for occupancy.

During his visit, he noticed frozen, rutted ground which was evidence of the inclement weather under which the construction workers had been operating. He remarked, "I am surprised at the progress made, considering the short time the project has been under way and the conditions under which the construction has been done."



Admiral H. G. Taylor

## School Nears Full Schedule; See 1,500 Trainees by April 1

THE inauguration this week of a third shift at the Pratt and Whitney Aircraft training school brought a 24-hour daily schedule to the miniature engine plant, already producing dozens of finished parts for the Double Wasp engine.

The first women destined for employment in the plant factory had reported, fifty strong, for schooling as tool crib attendants and machine taggers. William F. Grier, director training, said employment of women for instruction as machine tool operators will begin March 15.

After a conference with James E. Toher, director of personnel, Grier said present plans call for the school to be operating at capacity, with 1,500 to 2,000 trainees, by April 1. The schooling will require from four to six weeks, depending upon the aptitude of the trainee.

Despite the fact the Middle West is relatively barren of precision metal trade industries, Grier and his staff have discovered sufficient latent ability among the first trainees who reported last fall to qualify many of them for posts as instructors. The

hereditary familiarity with precision instruments that exists throughout New England, Grier said, was offset in the Kansas City area by applicants with better educational background and a determination to master what, to them, is a new art.

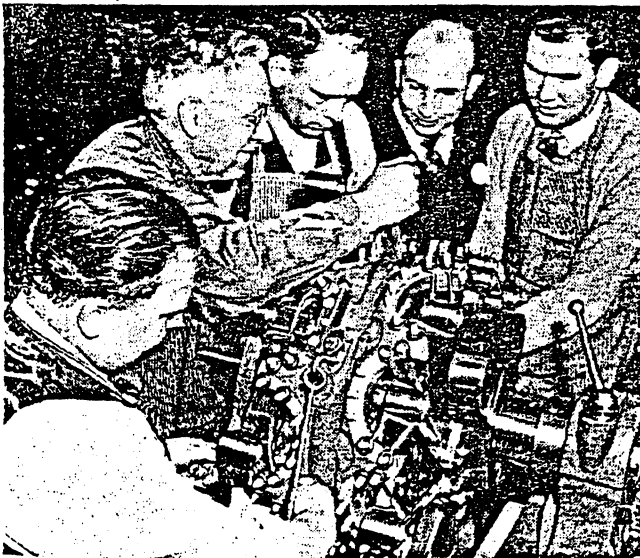
The Missouri school is regarded as the largest devoted to engine aircraft training in the nation. Now fully equipped, with forest of machine tools covering the thousands of square feet of floor space the school is turning out a wide variety of engine parts which are being stocked for final assembly when the plant moves into production. With its excellent location on the edge of Kansas City's downtown business district at 2735 Main street, the school has the best of public transportation facilities. A parking area just north of the building has been acquired recently by the Pratt and Whitney Aircraft Corporation of Missouri. Since the staff of the employment office was removed two weeks ago from the school to the personnel building adjacent to the plant site, all of the eight large classrooms now are available for lectures and paper work.

## INSTALL FOOD UNITS

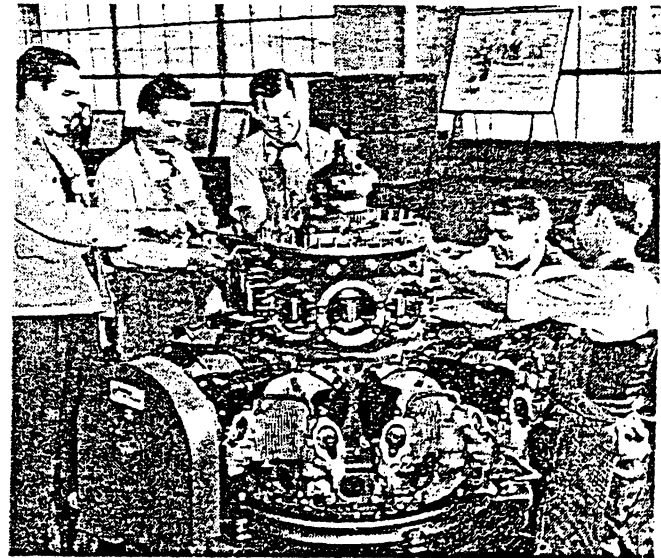
When the employees at the training school found restaurant facilities in their neighborhood inadequate and their time too valuable to be spent in lengthy lunch periods, John H. Miller, general manager of Myron Green's, and William H. Hart, instituted the Food Service Company, and moved the first rolling cafeteria into the Pratt and Whitney Aircraft training school.

Beginning at 10:30 o'clock in the morning, the portable lunchwagon moved first to the drill presses, and by 11 o'clock, had served all the trainees working at machines. It moved, then, to the various classrooms, serving employees and trainees at their desks with a variety of foods—hot and cold—at a nominal cost.

When the office workers moved to the plant site, they also were faced with a lack of convenient food supply, and the Food Service Company was again called upon to solve the problem. The cafeteria installed in the administration building, while having wheels, is operated on a stationary basis, and the employees file past, select their lunches, and eat them at nearby tables.



An instructor watches trainees in the exacting job of assembling the lower half of a crank case. The crank case is being built on a bench vise which revolves to permit completion of all sides. The four-armed apparatus at the right side of the motor is a yoke which holds connecting rods in place. Trainees will assemble and take apart this section many times before they reach the required degree of precision.



Here the lower half of a Double Wasp engine has been assembled; the trainees now are tackling the upper half. Operating in pairs, they are bolting on cylinders under the direction of an instructor (left). One of the men in each team is holding the cylinder in place while the other bolts it on with a speed wrench. At this stage, the motor still rests on a revolving base which facilitates assembly.

## K. C. Trainees in Hartford Near Completion of Program

**E**AST HARTFORD, CONNECTICUT, February 18.—More than 200 men chosen six months ago from all walks of life in Kansas City to supervise the manufacture, inspection, and assembly of the Double Wasp engine at Kansas City today were entering the final lap in their training program.

Probably not ten of them last summer would have believed, had you told them, that the big Pratt and Whitney 2,000-horsepower engine which a husky man could push down the street on a wheelbarrow, is as powerful as a passenger locomotive. Today, however, many of them are familiar at least by name, with many of the 10,000 parts that go into the aircraft engine. All of them are trained to apply the precision, engineering, and craftsmanship to those particular parts whose manufacture they will supervise.

When Fred G. Dawson, general manager of the Missouri plant, was in Hartford several days ago, he told those foremen who will serve in production that their training here will be concluded March 31. Foremen assigned to assembly and test houses will be detached May 1 to assume their Kansas City jobs. Of the original 300 who came here, scores who had been assigned to the task of training to be instructors in the Kansas City training school returned weeks ago to Missouri to take up their duties there.

It is with this, the final stage of their foremanship training, that the Kansas City men are now deeply concerned. They are eager in accepting the challenge in full realization that there can be no royal road to a job as a foreman for Pratt and Whitney Aircraft. They also realize that they cannot hope to hold that job secure without continuous study of ever-changing methods in the industry.

With most of the Kansas City men, the changing of shifts, loss of sleep, and long hours had only casual effect on efficiency of work. A few of the older men, however, have experienced some difficulty in making the

adjustments from normal routine. An incident which occurred recently at the East Hartford plant is illustrative.

A foreman trainee on the second shift—3:30 o'clock in the afternoon until midnight—had been at the plant since noon attending lectures and supervising the work in his department. At 11 o'clock an air raid alert sounded throughout the plant. After the usual waiting period, the blackout came, and in compliance with company rules the trainee promptly crawled under a steel bench as a protective measure. The all clear sounded, lights went on, and work was resumed, without benefit of the Kansas City supervisor. Not until 3 o'clock in the morning was he discovered, fast asleep far under the bench where he had rolled, a victim of sheer exhaustion.

Hayward Snell, director of training in the East Hartford school, pointed out that actually the men had gone through three stages of schooling. The first required them to master a great variety of technical theory. In the second stage, they worked in the departments at the plant side by side with foremen and workers, and mastered various operations of engine building.

"Now," Snell said today, "in the third and final stage, our foremen are staying in the background and Kansas City men are actually doing the job. This is their decisive test, and they are meeting it in a manner indicative of close application to their assignments."

Alex Eigner, shop superintendent at the Kansas City plant, recalled that many of the men selected last summer had no machine shop experience or background in the mechanical field. Today, he said, those very men "have come along very fast."

Charles F. Toren, chief inspector at the Kansas City plant said, "I am sure that the Kansas City foremen will serve as watch dogs for quality and precision. They will see to it that the specifications and close tolerances laid down by our engineering department are followed to the letter."

## Bill Hargiss Named As Welfare Director

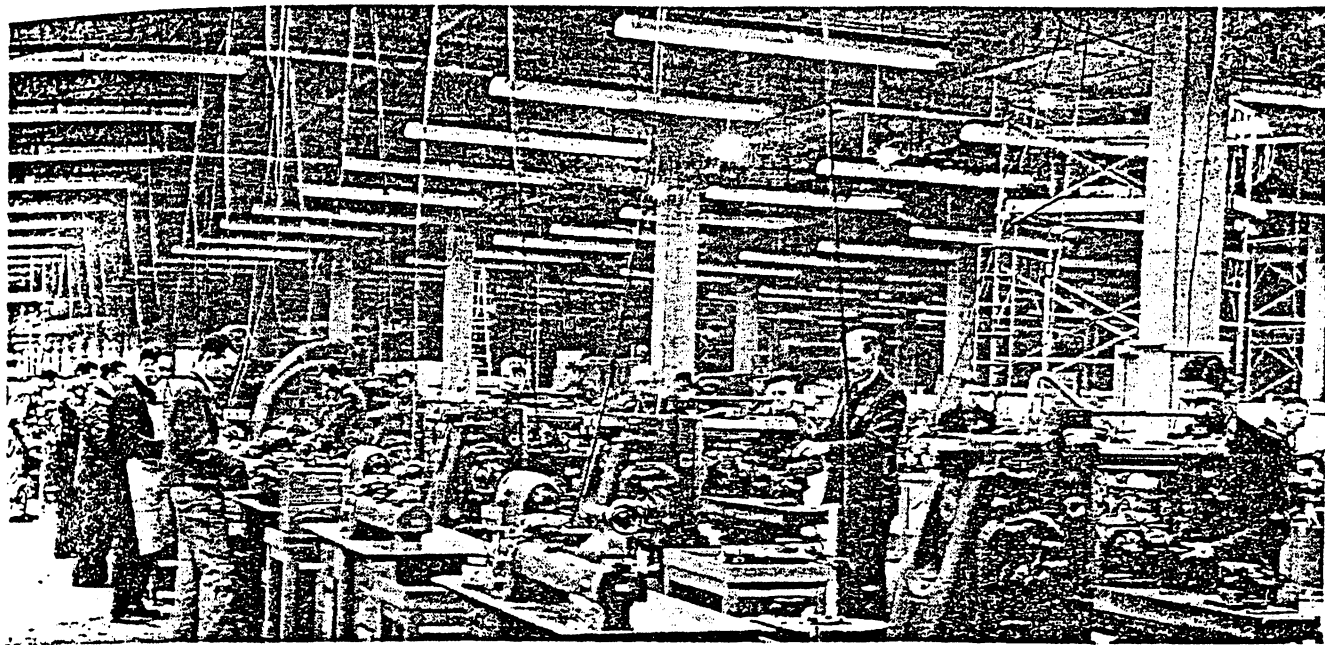
H. W. (Bill) Hargiss, the internationally known track and field coach, this week severed his connection with the University of Kansas to join the Pratt and Whitney Aircraft Corporation of Missouri as supervisor of welfare and recreation. Hargiss developed such stars as James Bausch, who won the decathlon championship in the 1932 Olympic games in Berlin; Glen Cunningham, the miler; John Kuck, the great javelin thrower, and many others.



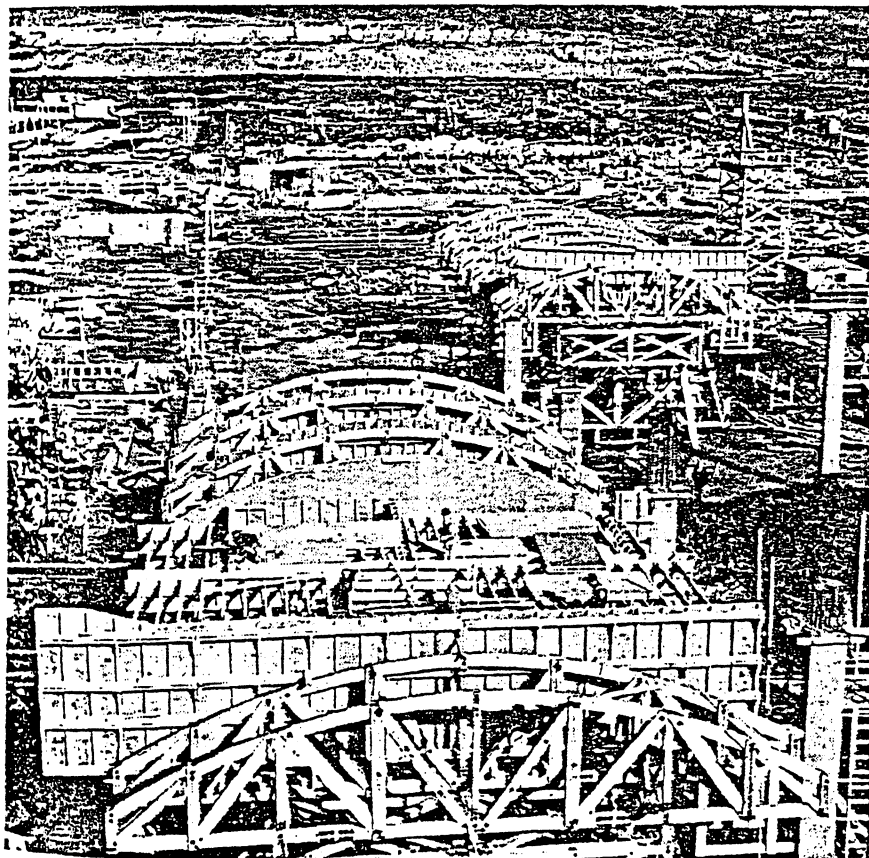
*Fingerprinting is an important step in the registration of new employers. Right and left hand prints of each employe are kept on file by the investigation department. Miss Lillian Riling, an escort, is undergoing the process while Susanne Barton, also an escort, waits her turn. H. M. Cullen, plant protection department, is the lucky man.*

"Forgetting all petty considerations," L. F. Campbell, factory manager at the Missouri plant, said, "the Kansas City men have shown a willingness to give everything they have to the job and to take away in return everything East Hartford can give them.

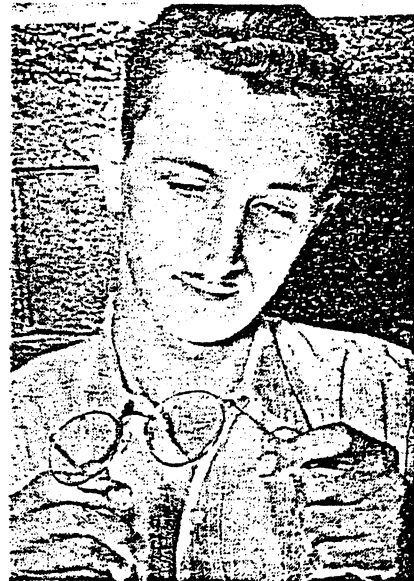
"There seems to be a mutual understanding among the men of Missouri that whoever comes forward with a good thought or helpful suggestion automatically shares it. This cooperative spirit has been in evidence from the start and my money says they will make it a working factor in the Kansas City organization all the time."  
—DON L. SHAW.



Less than eight months after ground was broken on the Pratt and Whitney Aircraft plant in Missouri, enough men had been trained and enough units had been provided to begin the essential task of tool making. These precision tools are manned by employees who already have undergone weeks of training, either in East Hartford or at the Kansas City school. They are the first factory employees to enter the plant site.



Heretofore all construction of the Pratt and Whitney Aircraft plant has been from west to east, utilizing the 80-foot mobile forms. Now that construction is approaching its end, additional mobile units have been built and are taking concrete from south to north. This view shows two of the new forms; in the background is the hill now being cut away for the installation of test houses.



#### WHEN SAFETY GLASSES PAY

L. H. Childers, a trainee, is shown above examining safety glasses which saved the sight of his left eye and possibly that of his right.

When a short circuit in the electrical system at the training school sent a spray of white-hot metal through the air above Childers' machine and in the direction of his face, it did no further damage than to spatter the left lens of his safety glasses with spots of metal and to burn the surface of the top of the left lens.

Childers' experience illustrates the efficacy of wearing safety glasses in areas where machinery is in operation.

## Contributors to This Issue



John Haley Photograph

FREDERICK B. RENTSCHLER



John Haley Photograph

EUGENE E. WILSON



Continental by R. M. G., Inc.

H. M. HORNER



FRED G. DAWSON

*T*here is an old adage in the newspaper game that you never admit a mistake. And surprisingly, newspapers make very few mistakes at that. Sometimes a type unit is lost, such as the case where a bride was seriously injured when the groom struck a bridge and the story came out, "The bride was eighteen feet wide from abutment to abutment."

We know we haven't done the job we'd like. We will make you this promise, though. With your help, which we confidently expect, the March issue will be better. It can't help itself. After all, the Wasp Nest is for men and women who already have demonstrated how alert they are. We are sure that that same alertness you give to your jobs will help us, because you will tell us of the things that interest you so that we can put them into these pages. So until March, thank you.

—The Editor.

## THE LIVELY CAPTAIN KIEFER COMES TO TOWN

CAPT. DIXIE KIEFER, executive officer of the Yorktown in the battles of Coral Sea and Midway, found Kansas City complied with the characteristics of the old home town in the five days he spent as commanding officer of the Naval Air Station at Olathe early this month.

Scores of men and women Captain Kiefer knew in the three years he served as inspector of naval aircraft at the Pratt and Whitney Aircraft division in East Hartford greeted him in his visit to the Missouri plant outside of Kansas City. They had worked with him there prior to their transfer to the West.

It was no surprise to them that Captain Kiefer, whose career shifts geographically as swiftly as his ebullient nature, should find himself transferred to command the aviation department at the United States Naval academy in Annapolis after only five days at the Olathe station. Another of his duties at Annapolis will be to inaugurate a new midshipman aviation training program.

Captain Kiefer suffered shrapnel wounds in the chest, bomb-fire wounds of the face and hands and a fractured right foot in the Yorktown's last historic engagement at Midway. As executive officer of the carrier, he was in charge of fighting five big fires from three 1,000-pound Japanese bombs that exploded on the flight deck.

One of the last men to abandon the crippled Yorktown at Midway, Captain Kiefer was unaware how badly burned his hands were when he gripped a rope to go over the side. He was still seventy-five feet from the water when the pain from seared palms forced him to loosen his grip.



Capt. Dixie Kiefer.

He bounced against the side of the carrier several times as he fell, fracturing a number of bones in his foot. He was in the water one and one-half hours before he was picked up by a rescue party from another American battleship. He was assigned to the Olathe base after convalescing in Los Angeles.

After he had made a careful survey of the plant, he told Lt. Comdr. C. E. Smith, inspector of naval aircraft at the Missouri factory,

"If they had two inspectors, Ed, I'd like to be here. First, though, I want to get this foot well and get back on a carrier for another crack at those Japs.

"This is really an impressive place. It's hard to believe so much progress could be made in such a short time. I'll say this—this plant is up to the usual high standard of Pratt and Whitney Aircraft."

Captain Kiefer spent several hours discussing the Coral Sea and Midway engagements with Rear Admiral Elliott Buckmaster, chief of naval air primary training at Fairfax. Admiral Buckmaster was the commanding officer of the Yorktown in both engagements.

Dixie, incidentally, is Captain Kiefer's true given name. The odd thing, though, is that he wasn't born south of the Mason and Dixon line as one might suppose; he hails from Idaho.

## GROUP RIDING NOW ORDERED

The Jackson County rationing board, oil and gasoline panel, has ordered that all supplementary gasoline coupons sought by employees of the Pratt and Whitney Aircraft Corporation must be cleared through Zaza Ralph, the company's supervisor of transportation, gas rationing, and housing.

The board has ruled that every employee driving a car to the plant is eligible for supplementary coupons, if needed, but its members told Ralph that as the personnel of the plant increases, group riding will be obligatory.

To facilitate the group riding plan, Ralph has broken down the greater Kansas City area of Jackson County, southern Clay County, Wyandotte County, Kansas, and Johnson County, Kansas, into 275 zones. He said present plans called for the institution of group riding by March 1. The assignments for group riding will be made from a card index system of the zones involved.

So far, Ralph said, one of the difficulties in issuing extra gasoline coupons has arisen from the failure of drivers to fill out their forms properly. He said a rigid enforcement of the

federal regulations pertaining to rationing must be followed; in the event that the extra coupons are used for transportation other than to the plant, drivers violating the rule will be unable to secure additional gasoline. Conformity to all the rules as well as the filling of the forms, Ralph said, will permit one day service for applicants.

Other services Ralph's department now offers to employees are city and state motor car licenses for purchase; tire inspection with no service charge, and a listing of available rental and sales properties.

# TRANSITION

THERE are certain little eccentricities of Missouri that personnel transferred from East Hartford now are beginning to take in stride. They have their peculiar ways in New England, but none of the following ever happened to those affected until they reached Kansas City.

For instance—

James E. Toher, director of personnel, still is puzzled by the application of a peppery little fellow who listed as his outstanding qualifications for the operation of a turret lathe: (a) he once farmed cotton, and (b) he speaks Indian fluently.

Oscar Mason, assistant to the factory manager, arrived home to find Mrs. Mason still somewhat agitated, eight hours after the episode, over the dress of a Negro maid who had applied for a job. The girl appeared in a complete riding habit, jodhpurs, glistening boots, riding crop and all, and announced she was ready to go to work.

A plumber was summoned to the home of Fred G. Dawson, general manager, to connect the gas range. After several hours had elapsed with little progress, Mrs. Dawson consulted with her husband at his office. He asked her to call the plumber to the telephone.

"What seems to be the trouble?" Dawson inquired. "Actually, it's a very simple job, connecting the range, isn't it?"

"Listen, bud," the plumber sputtered angrily, "if you don't think I can do this job, I'll get off."

Dawson's silence was eloquent.

"Okay, if you feel that way," howled the man, "I'm gettin' off."

And he did.

Searching for a home, a Pratt and Whitney Aircraft executive and his wife came upon a nicely appointed residence on the South Side. Nothing in its standard design prepared them for the shock they felt when they examined the bathroom. There their startled eyes fell upon two wash basins, side by side, and carrying out the balance were two stools.

It can't be double vision in the case of this particular family either. When their furnace decided to blow up, it did so twice, all within twenty-four hours.



"Is it in the guard's manual that Judkins has to taste all the coffee?"



"Cain't see why so' we go to all da trouble to build dis plant. Why not jes' buy dat ole airplane engine?"

Both L. C. Mallet, assistant general manager, and Henri Barre, purchasing agent, approach all electrical outlets these days with great wariness. Each has had the discomforting experience of hooking up lighting and refrigerator fixtures only to discover that while the plugs were new and shiny, they were barren of any electrical wire connection.

George Fitch, supervisor of plant protection, went to a downtown music shop to purchase phonograph records. After he had selected albums of Sibelius and Victor Herbert, his taste manifestly pleased the sales girl.

"Now," she said in the tone of one connoisseur to another, "wouldn't you like Tschaikovski's Fifth Symphony?"

"I believe not," Fitch replied blandly. "You see, I'm unacquainted with his first four."

Fitch is not so ignorant of music as that crack led the sales girl to believe. In his undergraduate days at the University of Notre Dame, he played the clarinet in an orchestra good enough to tour Europe in the summers.

There is one characteristic in Missouri that must be universal the nation over. Just like East Hartford, the transplanted Easterners find the local countryside bubbling over with job seekers fully convinced that they are ordained to start with Pratt and Whitney Aircraft as vice-presidents or overseers for the general manager.

The line of applicants before the desk of Louis Palmer, assigned to the preliminary interview office, finally thinned. The last man, his face somber, twisting his hat in his hands, stepped forward.

"I don't want a job myself," he said. "I wonder if you might have something, though, for my wife's brother-in-law."

"What type of work could he qualify for?" Palmer asked.

"Well, I don't rightly know," the man said. "You see, him and his wife have been living at my house three years now, and he ain't never done nothin' but eat and sleep."

The next day Palmer was confronted by a young woman attired in exhilaratingly scarlet slacks. She said she wanted a position as a receptionist. Palmer advised her nothing in that line was open at the moment.

"Damn old man Pratt and damn old man Whitney," the girl stormed, her face now as crimson as her britches. "I should have known they was dumb, building this thing out in this cow pasture, anyway."

### Escorts

Miss Montez Dusenberry, 1941 Queen of the American Royal, models the first escort uniform of light olive drab gabardine. Her associate escorts, Miss Joan Royal, former fashion designer (left); Miss Maurita Eggleston, once Chillicothe Homecoming Queen; and Miss Betty Walker (right) a Cessna Aircraft beauty contest winner, examine the uniform which they will wear. The material—rayon and "air-lac"—is crease-resistant and suitable for year-round wear. Front and back kick pleats in the skirt are stitched down so they can't lose their press, and the emblem on the sleeve is embroidered in gold. With the uniforms the girls will wear identical British tan shoes.



### Receptionist

Miss Annie Laurie Warehime, chief receptionist at the Pratt and Whitney Aircraft plant, gets a visitor's autograph at her desk in the administration building lobby. A former teacher of art and primary grades, and a licensed pilot, Miss Warehime collects firearms and hun's while she isn't ironing out the bottlenecks in the reception room.

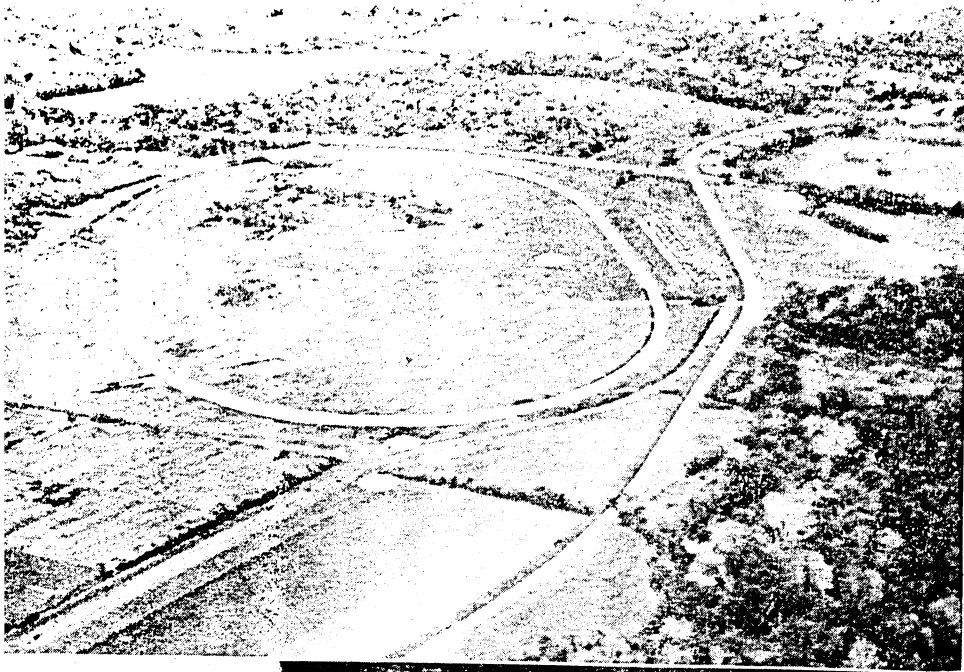


### Courier

Miss Ruth Groves prepares to go to town in her new courier's uniform of brown whipcord. The suit, concealed by the coat, is of the same material and similar in cut, but is single-breasted, with front and back pleated skirt, and with pockets fastened down by the brass buttons, which bear the Pratt and Whitney Aircraft eagle.

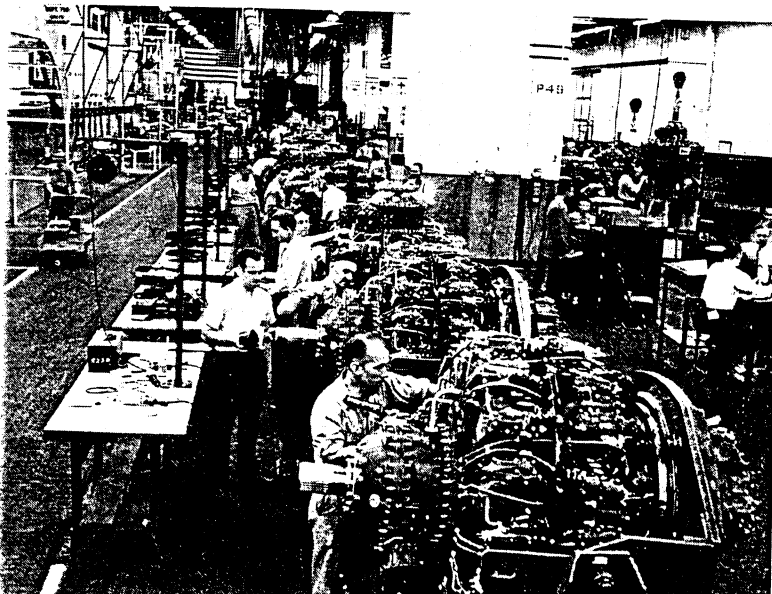
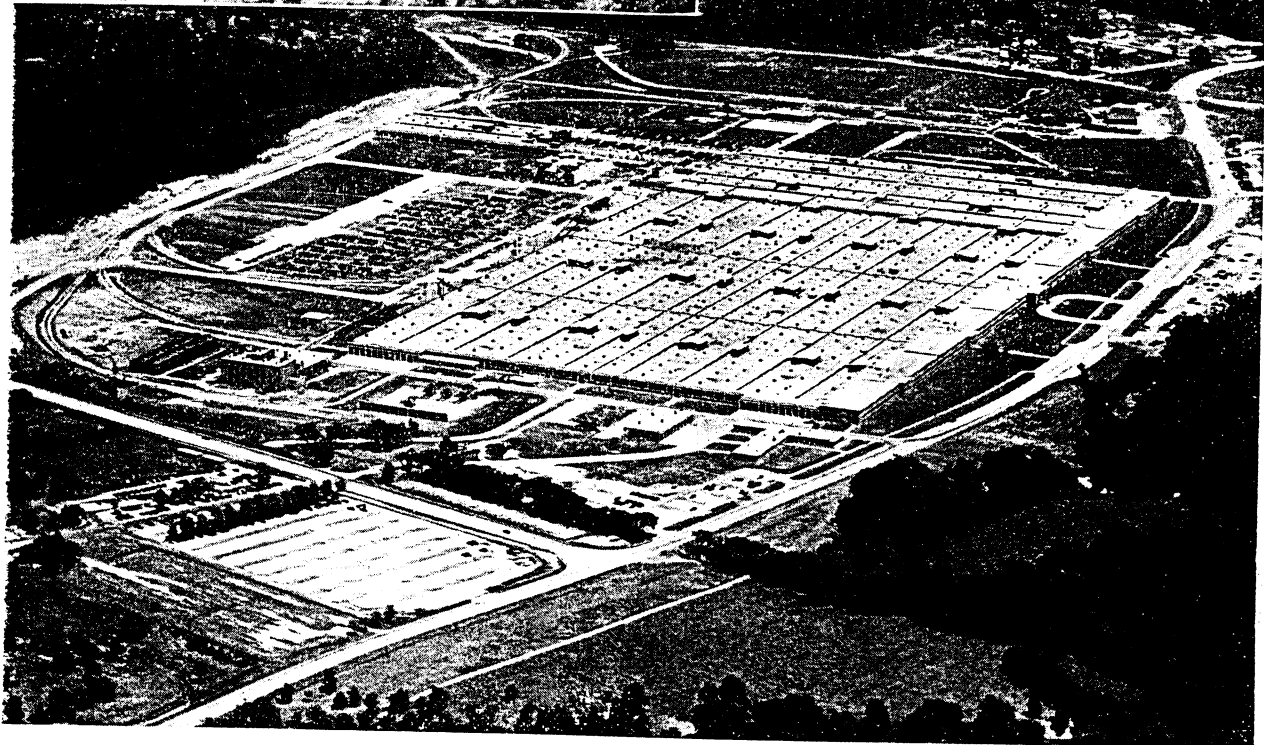


*The  
Pratt & Whitney  
Aircraft  
Story*



*Ground was broken on July 4, 1942, for P&W Corp. of Missouri at Kansas City.*

*Three and one-half million square feet of prairie were devoted to R-2500s.*

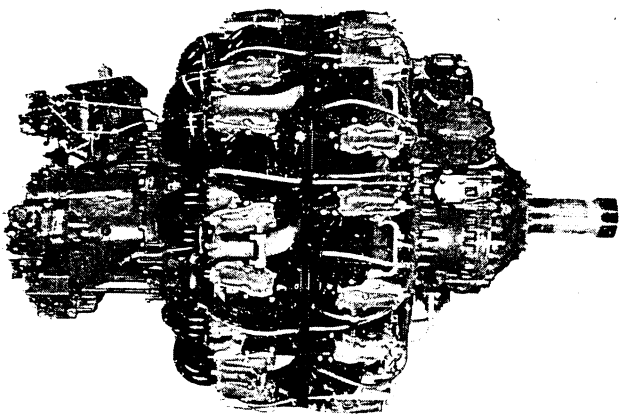
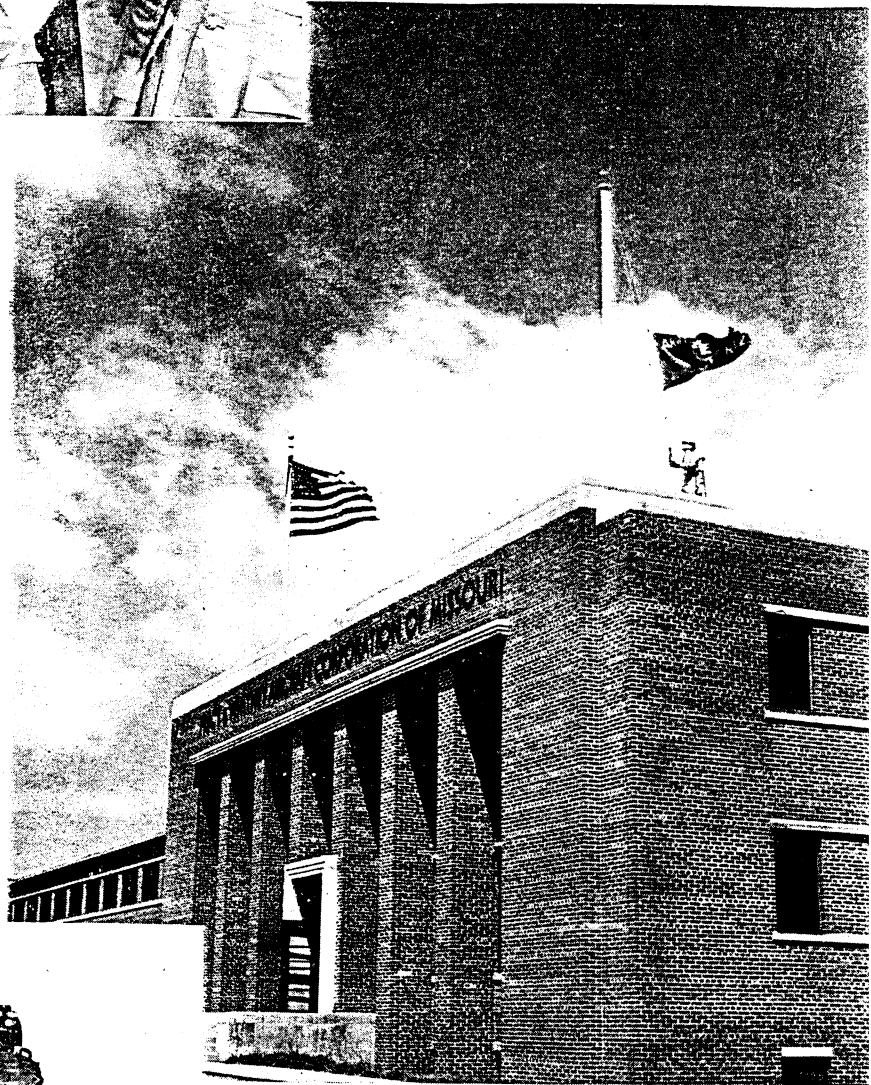


*Missourians made complete Double Wasps, power sections, and spare parts.*



*Army-Navy "E" presentation to L. C. Mallet by Admiral Harold Sullada honored achievement at Kansas City.*

*The "E." symbolic of a superior effort in war production, unfurled over Pratt & Whitney of Missouri in June, 1945.*



*From June 1, 1943, until hostilities ceased on V-J Day, 7,931 Double Wasps were manufactured at Kansas City.*

THE convulsive national effort to produce the goods of war was now well under way. Only time and logistics could array the material and the fighting men against the enemy. The spring months of 1942 were dark with military reverses. Japan was sweeping swiftly through the South Pacific, almost to the shores of Australia. Bataan's tragic death march had ended. Germany was hammering again deep inside Russia. Rommel was loose in the deserts of North Africa. In the face of these developments the Navy, acting both for itself and the Army Air Corps, foresaw even a greater need for the R-2800 Double Wasp than Pratt & Whitney Aircraft and its fast-building licensees could supply. Now its spokesmen returned and asked United Aircraft to reconsider the company's early refusal to build another Pratt & Whitney plant inland, supervised by Pratt & Whitney men.

East Hartford was running smartly in high gear, and Rentschler and Horner, although they realized the dangers of siphoning off supervision personnel, acceded. With War Production Board and Navy representatives, Horner and a staff of his men flew to Kansas City, where it had been suggested manpower and housing might be available. Benny Whelan, the veteran company pilot, circled over an abandoned racetrack at the city's southern outskirts, and the visitors studied the little valley that lay below them, flanked by a community of farms, one of which, they were told, was the home of Senator Harry Truman's mother, the other the home of Bryce B. Smith, former mayor of Kansas City.

Both Chicago and St. Paul had been suggested as alternate possibilities for the new plant. Before he moved on to those cities, however, Horner put a staff of men to work studying such factors as electric power, water supply, transportation, and he even undertook to determine the educational qualifications of the Kansas City area's people. The fact that the area's excellent school system had produced a level of education that found most of the citizens with the equivalent of a high school diploma or better was an important factor in the decision he now made to choose at once the racetrack site for the new plant. In the single-purpose, single-operation production planned, the area's high level of schooling would ease the immense task of intensive training. Many of Kansas City's leading citizens, busy as they were at their own wartime tasks, gave freely of their crowded hours to help Horner, notably Mayor John B. Gage, Robert Mehornay, Dan L. Fennell, and L. P. Cookingham, the city manager.

Ground was broken on July 4, 1942. Four hundred Midwesterners were selected to spend six to nine months in East Hartford, in a rigorous foreman's training program. From all appearances, possible success in Mis-

souri had the full count of strikes against it. The Missouri venture was the last of the really big industrial war constructions; it was at the bottom of the heap in all priorities. Manpower had been drained off from that region, if it was not already engaged in North American bomber production, explosives work, or ammunition manufacture. Tool deliveries would be as much as two years away. The Missourians had little background in the metal-cutting industry. Nevertheless, a plant even larger than East Hartford's war-enlarged home facilities was built, three million square feet under one roof.

A curious pattern of events then happened. The Missouri plant was scheduled to produce the R-2800-B Double Wasp engine, on which a deep reservoir of manufacturing knowledge already had been accumulated. Essential machinery scheduled for installation in Kansas City was diverted under lend-lease to England to build the Napier Sabre engine, then regarded as England's white hope, although it eventually turned out to be of little war assistance. Nevertheless, Kansas City was thrown off its schedule to such an extent in its tooling that its first production engine was postponed to come out about three months before Pratt & Whitney Aircraft's engineering was due to have its R-2800-C development cleaned up and completely ready for release for production. It had become apparent to the Pratt & Whitney organization that the air war was a technical and performance race, and this being the case, Pratt & Whitney Aircraft decided it was altogether wrong to start a new plant into production on an engine which within a few months would be relatively obsolescent.

Hobbs was convinced that a gamble should be taken even though the development of the R-2800-C was not entirely completed. He went to the Navy where the able Commander (later Captain) Selden Spangler, head of the Bureau of Aeronautics' engine section, quickly agreed that Kansas City, despite the hazards, must produce the "C" engine. Spangler's backing convinced those responsible for production planning in the Navy, and when the matter was referred to the Army Air Force by Horner, who took the suggestion to its men, they also agreed.

The calculated risk — and some of it was beyond calculation — that was taken here by Pratt & Whitney was truly great. The engine not only was totally untried, but essentially no part of it had ever been in production in the Hartford plant or any place else. Among the major questions were the crankshaft and cylinder heads which were not only of novel design but required development of new manufacturing methods in order to be produced. The forged cylinder heads with their deep, fine, and stepped fins had been produced in the experimental shop in East Hartford by an ingenious

alteration of several standard machines, but this was a slow, cumbersome method totally unsuited for any quantity of production. Indeed, several skeptics said they never could be manufactured in production quantities. A method of manufacturing was evolved, however, chiefly by Arthur A. Merry, that proved efficacious.

Now the trick was to build the most advanced of the company's production engines, the R-2800-C. The cheerful Missourians swarmed into Hartford and began studying for their job. Their easy ways, their drawling speech, and their happy outlook impressed New England. Certainly they were undaunted. Men who were six months away from being foremen were getting their first look, in many cases, at a micrometer or a centerless grinder, but it failed to dampen their spirits. Then, after completing their studies, they hurried home where a team of veteran Pratt & Whitney Aircraft men, headed by Frederick Dawson, Leonard C. Mallet, Fred Detweiler, Arthur Smith, Charles Toren, Richard Baseler, Leete Doty, Alex Eigner, Will Emond, Andy MacPhee, Arthur Wheeler, Paul Visco, Clayton Adams, and several score other transplanted Yankees awaited them. Horner was president of the Missouri subsidiary throughout and he somehow crowded weeks of on-the-scene activities into his Missouri duties while he continued to manage the home plant and to serve all of United Aircraft's four divisions as vice-president for manufacturing.

Inspecting the Missouri plant, still in the process of being built, in 1943, William Knudsen surveyed the great gaps in tooling, assayed the Missourian's non-metal background and the lack of manpower, and said with a gloomy shake of his great head, "I'm going to be a surprised man if we ever get a single engine out of this plant. If we do, it probably won't run."

**H**E was not only surprised with the end results; he was astonished. The tooling gaps quickly filled. The Missourians, with an unstinting energy and a great community zeal, supplied the men and women, many of whom had never seen a cutting tool before. They were quickly trained, and six months after Knudsen's visit they not only had built R-2800-C engines but they had them running. Mallet, who had assumed the general managership after Dawson became ill in 1943, and his mixed team of Yanks and Missourians built engines at a tremendous rate, turning out 21,506,167 horsepower in the "C" model in the next 18 months. The gamble had paid off. As much as 3,400 horsepower was taken from the "C" engines, and due to the cylinder heads, the high power was achieved with an actual reduction in cooling drag. Moreover, the Kansas City engines promptly went into battle action, both in Europe and in the Pacific. In the crisis of the Battle of the Bulge, it was squadrons of Republic P-47 Thunderbolts, powered with

Missouri-built, water-injection-equipped R-2800-Cs, that scrambled down on von Rundstedt's forces the moment the weather broke after five days of ground action, and gave McAuliffe's and Patton's men the aerial support they so badly wanted to turn the tide.

"I was in the Ardennes a few days later," said Martin Graham, senior field service representative for Pratt & Whitney Aircraft in Europe. "We came to a thick woods where von Rundstedt had hidden a munitions dump. He couldn't have picked a better spot so far as air reconnaissance went. That had been a really heavy woods before we blew it all to hell.

"Even blown up, though, right through the center of that woods, you could see by the shattered trees and the torn branches where the P-47s had gone through. You'd have to see it to believe it. Those crazy kids flying the P-47s couldn't see what was hidden from above. So they went right into the forest to find out. They cut a path right through the top of that woods. I had thought the Army guys were kidding me when they told me the story the night before. They said every plane that went in and chewed out the tunnel came out — flying too. One minute you think of a plane as a fragile thing and then you see something like that . . ."

Those Thunderbolts at Bastogne were rugged, deadly fighters. They had been the match from the outset for the best of the German fighters, the Focke-Wulf 190, in speed, altitude performance, and firepower, but in the summer of 1942 the 190's superior climbing performance had become a grave Army Air Corps worry. Opie Chenoweth, head of the Army's Air Technical Service Command, discussed the matter with T. E. Tillinghast, Pratt & Whitney Aircraft's sales manager, a veteran fighter pilot of World War I and an engineer. Tillinghast said that the R-2800 was rugged enough to deliver more power if ways and means could be found to suppress detonation. Chenoweth, searching for an answer to the 190's climb superiority, then recalled that previous experimental success in higher engine output ratings had been obtained by the injection of water in the engine's fuel induction system. Tillinghast agreed to pursue the matter, and General Echols telephoned Luke Hobbs for an opinion of possibilities on the problem.

**I**T developed that Arthur Smith, then in Missouri's Pratt & Whitney plant as chief engineer, and Donald S. Hersey, another company engineer, held patents filed as early as March, 1938, on the subject of water and anti-detonant injection. Hobbs and Parkins, together with other members of the engineering staff, investigated the problem quickly, and Hobbs telephoned Echols and assured him that his men now felt certain they could add several

hundred emergency combat horsepower to the R-2800 by a water-injection mechanism. A crew of engineers set to work headed by Perry Pratt, then project engineer of the R-2800 and later assistant chief engineer; R. C. Palmer, chief of the fuel devices group, and L. H. Gitzinger, chief of the company's installation engineering department. These men were ably assisted by William J. Closs, Sam Fox, Charles T. Roelke, and J. Stuart Conley.

In less than three months the first water-injection mechanism was flown, and shortly thereafter the first two kits were installed on combat P-47s in Europe. Before the summer of 1943, the water-injection mechanism was in wide use, the pride of Army and Navy pilots alike. It gave them boosts in speed of over 40 miles an hour and appreciably increased their climb performance. Water injection was a standard installation on engines now destined for use in the Vought F4U-4 Corsair, the Thunderbolt, the Navy's crack F6F Hellcat, and it was being adapted to many other aircraft. Tommy Blackburn's famed Navy VF "Skull and Crossbones" squadron flew the first water-injection Corsairs in the Pacific. Over Europe's battlefields, the P-47s, now capable of obtaining 2,800 to 3,400 horsepower from the R-2800s in emergency combat conditions thanks to water injection, were the masters of all German fighters, and their pilots delighted in out-climbing and out-maneuvering the Focke-Wulf 190s — the one edge the German aircraft had had.

Thus, three of the nation's five key fighter aircraft in the decisive years of the war were powered by the Double Wasp — the P-47 for the Army, and the Navy's F4U-4 and F6F. The fine North American P-51, powered by a Rolls-Royce Merlin built by Packard, shared the brunt of the offensive fighting with the Thunderbolt over Europe's skies. The only other fighter still in steady front-line action as American and Allied forces began carrying the assault to the enemy was the Lockheed P-38 Lightning, equipped with two Allison liquid-cooled engines. Pratt & Whitney's Twin Wasps and Double Wasps powered a host of bomber planes, including the Consolidated Vultee B-24, the Martin B-26, the Douglas A-26, the Martin PBM-5, and many others. Ninety-eight per cent of all the transports flying for the services were powered by Pratt & Whitney engines.

This vast outpouring of horsepower was in use wherever men fought. Millions of combat men in the Army Air Corps and the Navy, scattered in all the corners of the globe where battle raged, knew the R-2800, the R-1830, the R-2000. The striking power of the Navy's task forces was shaped around aircraft whose power largely was supplied by Pratt & Whitney Aircraft. In



the years of peace, Marc Mitscher, Duke Ramsey, John Dale Price, Raddy Radford, Mel Pride, Slats Sallada, John Cassady, Jock McCain, Bull Halsey — the men now directing the war at sea — had trudged down the broad aisles of the plant, studying the fabrication of the engine whose performance they had known since their junior officer days. In other years Tooley Spaatz, Ira Eaker, Pete Quesada, Hoyt Vandenberg, Rosy O'Donnell, Jimmy Doolittle, and a score of other senior officers plotting and supervising the Army Air Corps' assaults had wandered through the plant and asked of Hobbs, Parkins, Horner, Mead, Willgoos, and Tillinghast what new ranges in power were in the offing.

In the hard drudgery of fighting, an occasional youngster emerged from obscurity for his electrifying skill in combat — Joe Foss, Ken Walsh, and Greg Boyington of the Marines; the Navy's Dave Campbell, Ike Kepford, Jim Thach, and Butch O'Hare; the Air Corps' Don Gentile, Dave Schilling, Francis Gabreski, Bob Johnson, Hub Zemke, Neel Kearby, and many others who rang up astonishing scores in combat action. They were flying behind Double Wasps, and thousands of men and women, cutting, grinding, buffing, polishing, and inspecting the 14,000 parts that went into the engine, read of these pilots and felt for a moment a touch of their glory — they'd had a hand in building the horsepower that carried the youngsters into action.

The complete war production total of Pratt & Whitney engines was:

	<i>Engines Shipped</i>	<i>Engines and Spare Parts Equivalent to:</i>
Pratt & Whitney Aircraft . . . . .	129,505	186,034,530 hp
Licensees of Pratt & Whitney Aircraft . .	226,183	396,274,026 hp
Pratt & Whitney Aircraft Corpora- tion of Missouri . . . . .	<u>7,931</u>	21,506,167 hp
	363,619 engines	603,814,723 hp

The complete roster of aircraft powered by Pratt & Whitney engines in the war was:

FIGHTERS	<i>Army</i>	<i>Navy</i>	
Consolidated Vultee	P-66		Vanguard
Curtiss	P-36		Mohawk
Grumman		F4F	Wildcat
Grumman		F6F	Hellcat
Grumman		F7F	Tigercat
Northrop	P-61		Black Widow
Republic	P-43		Lancer
Republic	P-47		Thunderbolt
Vought		F4U	Corsair
Commonwealth (Australian)			Boomerang

BOMBERS (All Classes)			
	<i>Army</i>	<i>Navy</i>	
Consolidated Vultee		PBY	Catalina
Consolidated Vultee		PB2Y	Coronado
Consolidated Vultee	B-24	PB4Y	Liberator
Consolidated Vultee		PB4Y	Privateer
Douglas	A-26		Invader
Douglas		TBD	Devastator
Lockheed	B-34	PV-1	Ventura
Lockheed		PV-2	Harpoon
Martin	A-22		Maryland
Martin	B-26	JM	Marauder
Martin		PBM	Mariner
Vought (Consolidated Vultee)		TBY	Seawolf
Vought		SB2U	Vindicator
Bristol (British)			Beaufort II
Bristol (British)			Bolingbroke
Short (British)			Sunderland V
Vickers (British)			Warwick I
Vickers (British)			Wellington IV

#### TRANSPORT, CARGO AND TROOP CARRIERS

Beech	UC-43	GB	Traveler
Beech	C-45	JRB	Voyager
Budd		RB-1	Conestoga
Consolidated Vultee	C-87	RY	Liberator Express
Curtiss	C-46	R5C	Commando
Douglas	C-47	R4D	Skytrain
Douglas	C-53	R4D	Skytrooper
Douglas	C-54	R5D	Skymaster
Fairchild	C-82		Packet
Grumman	OA-9	JRF	Goose
Howard	NH-1	GH	Nightingale
Noorduyn	C-64		Norseman
Sikorsky			Excalibur S-44

#### TRAINERS

Beech	AT-7	SNB	Navigator
Beech	AT-11	SNB	Kansas
Consolidated Vultee	BT-13	SNV	Valiant
Fleetwings	BT-12		Sophomore
North American	AT-6	SNJ	Texan (Harvard)
Republic	AT-12		
Airspeed (British)			Oxford V
Avro (British)			Anson V
Commonwealth (Australian)			Wirraway
Miles (British)			Master II

#### OBSERVATION AND MISCELLANEOUS PURPOSE CRAFT

Curtiss		O-52	Owl
Curtiss		SOC	
Goodyear	"K" & "M"		(Blimps)
Sikorsky		R-5	(Helicopter)
Vought		OS2U	Kingfisher

WHEN the war ended, it was found that Pratt & Whitney Aircraft and its licensees had produced 50 per cent of all the horsepower required by the combined American air forces. Moreover, an imposing part of Great Britain's air strength was Pratt & Whitney-powered. Wright Aeronautical and its licensees had supplied 35 per cent of America's total aircraft horsepower, and the remaining 15 per cent was divided between Packard, as the builder of the Rolls-Royce Merlin; Allison; Lycoming, and others. In five brief years the United States had built an air force quantitatively larger than the combined air armadas of all its allies and all its enemies, and airplane for airplane, its products were qualitatively superior.

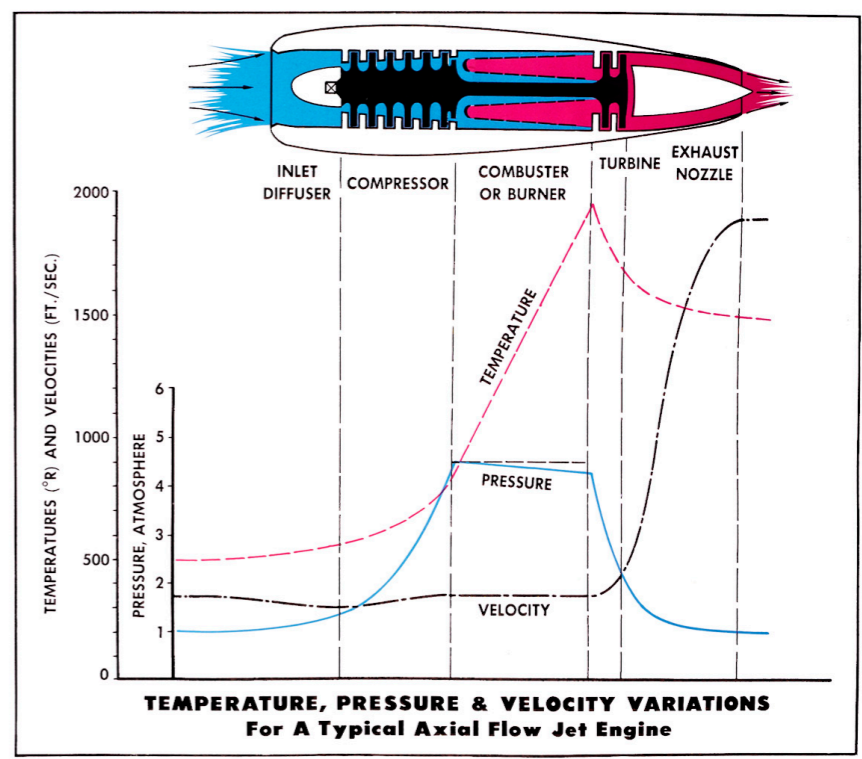
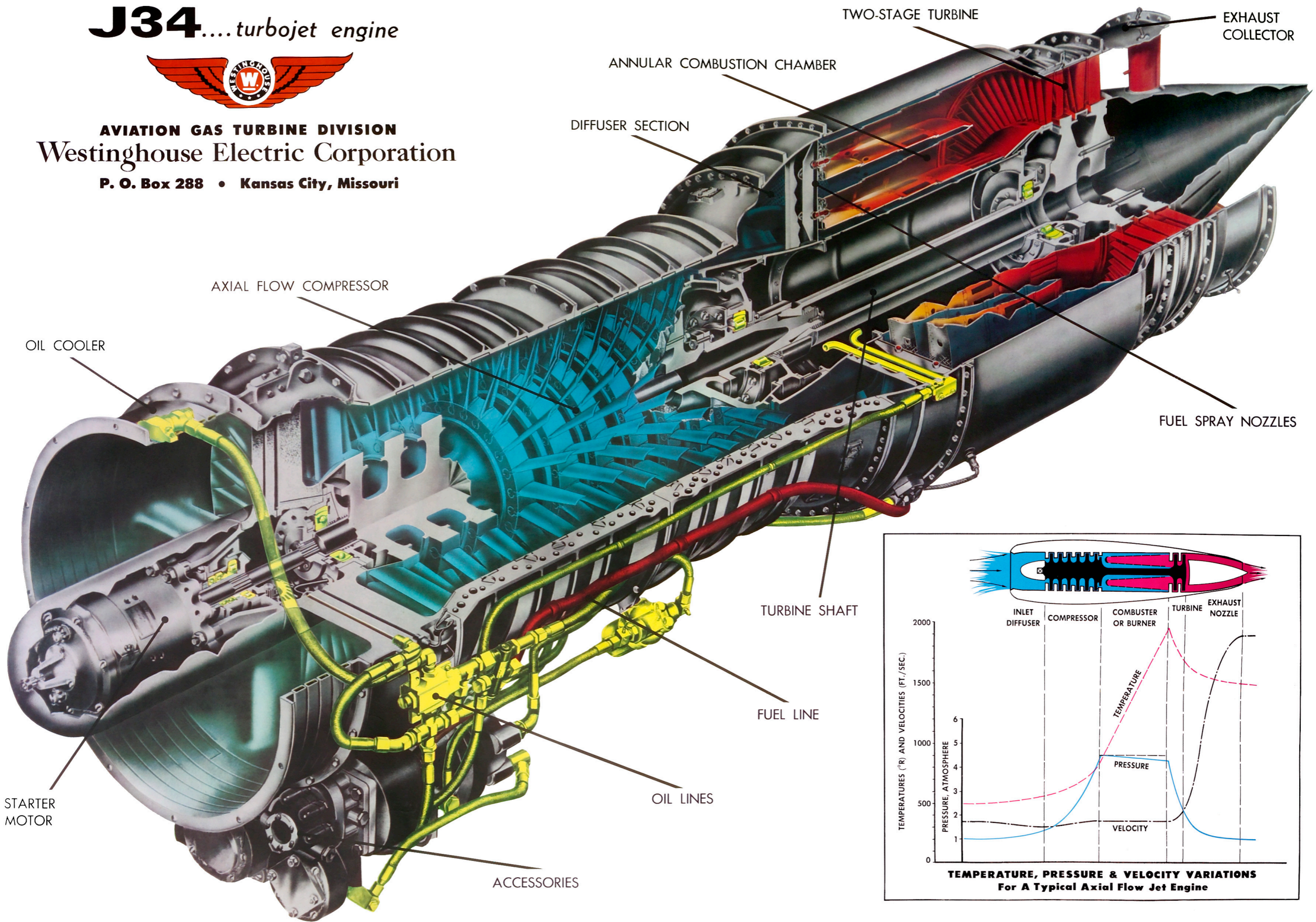
Almost without exception, as Rentschler long had believed, the key combat and transport airplanes whose performance was vital in the final victory were "going articles" before the outbreak of the war, either already flying or in an advanced design stage with earlier prototypes of sound performance guiding the designer's hand. The fluidity in production lines that had been the hallmark of the little prewar aviation industry was maintained in the gigantic machining and assembly lines of mass aircraft production. The frank and critical evaluations placed upon equipment in battle action, both by the fighting men and the field service representatives from the factory floors, were swiftly translated and improvised into fresh changes offering better performance before they left the factory floors. American equipment, as Brigadier General Frederick Smith observed, "improved every day" while the Germans and the Japanese went into mass production of stereotyped models, with design often frozen months after serious defects had appeared in combat operations.

In 1938, when France first came pleading for help, Pratt & Whitney's Twin Wasp was its highest-powered production engine, delivering 1,200 horsepower. When the war ended, Pratt & Whitney's maximum horsepower per engine had jumped to over 3,000 in combat use, and the R-4360 Wasp Major had demonstrated six months before the war's close a 3,500-horsepower combat rating, the highest ever developed by any engine anywhere in the world. Five years of intensive development had gone into the Wasp Major, yet it was only then ready for combat action. Five years had passed since Rentschler and General Arnold had decided to scrap the liquid-cooled project and get along with Hobbs' four-row Wasp Major, but even under the intensity of war development, five years does not permit sufficient time to develop a tested service power plant — *not if a nation had superior engines at the war's outbreak.*

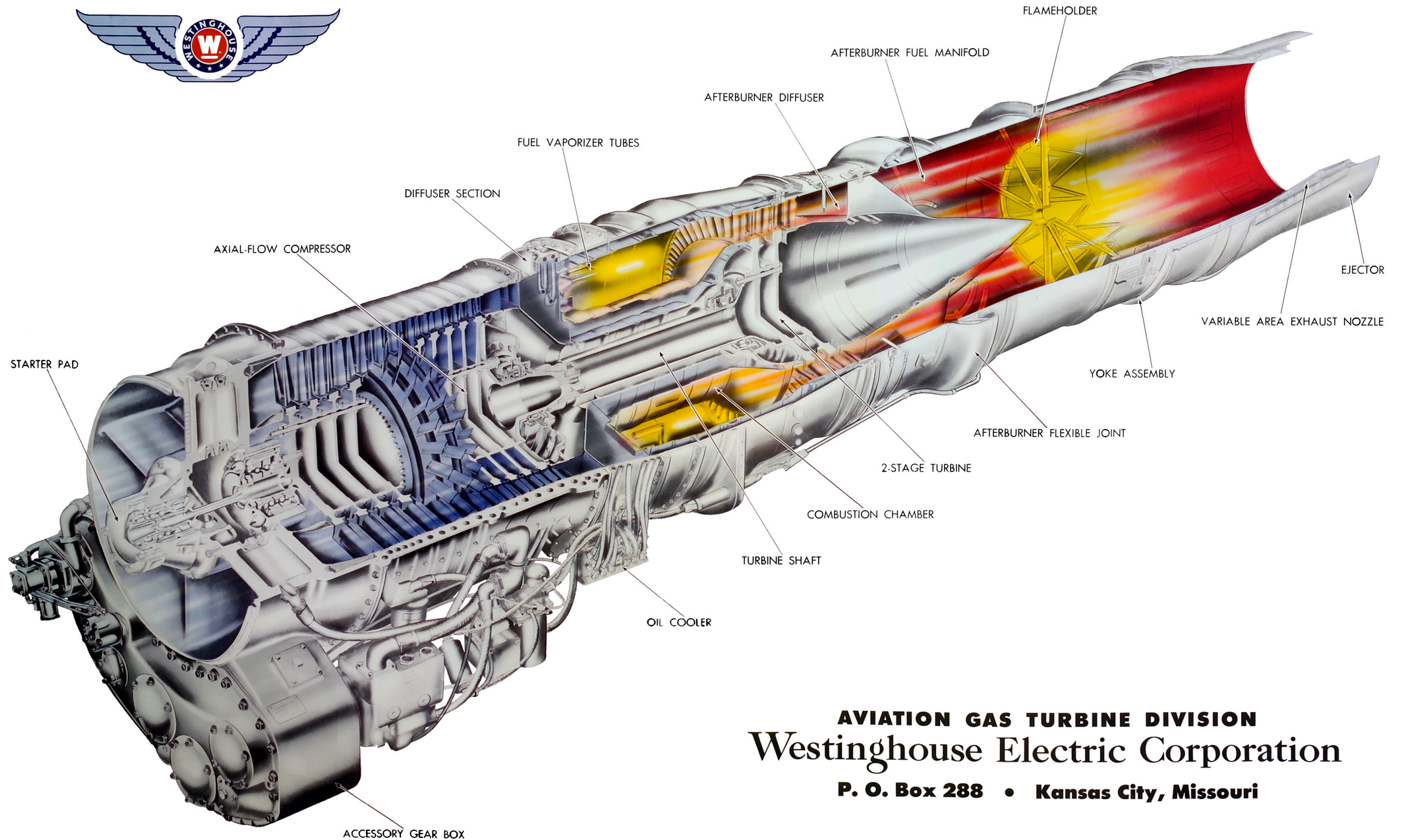
# J34....turbojet engine



**AVIATION GAS TURBINE DIVISION**  
**Westinghouse Electric Corporation**  
 P. O. Box 288 • Kansas City, Missouri

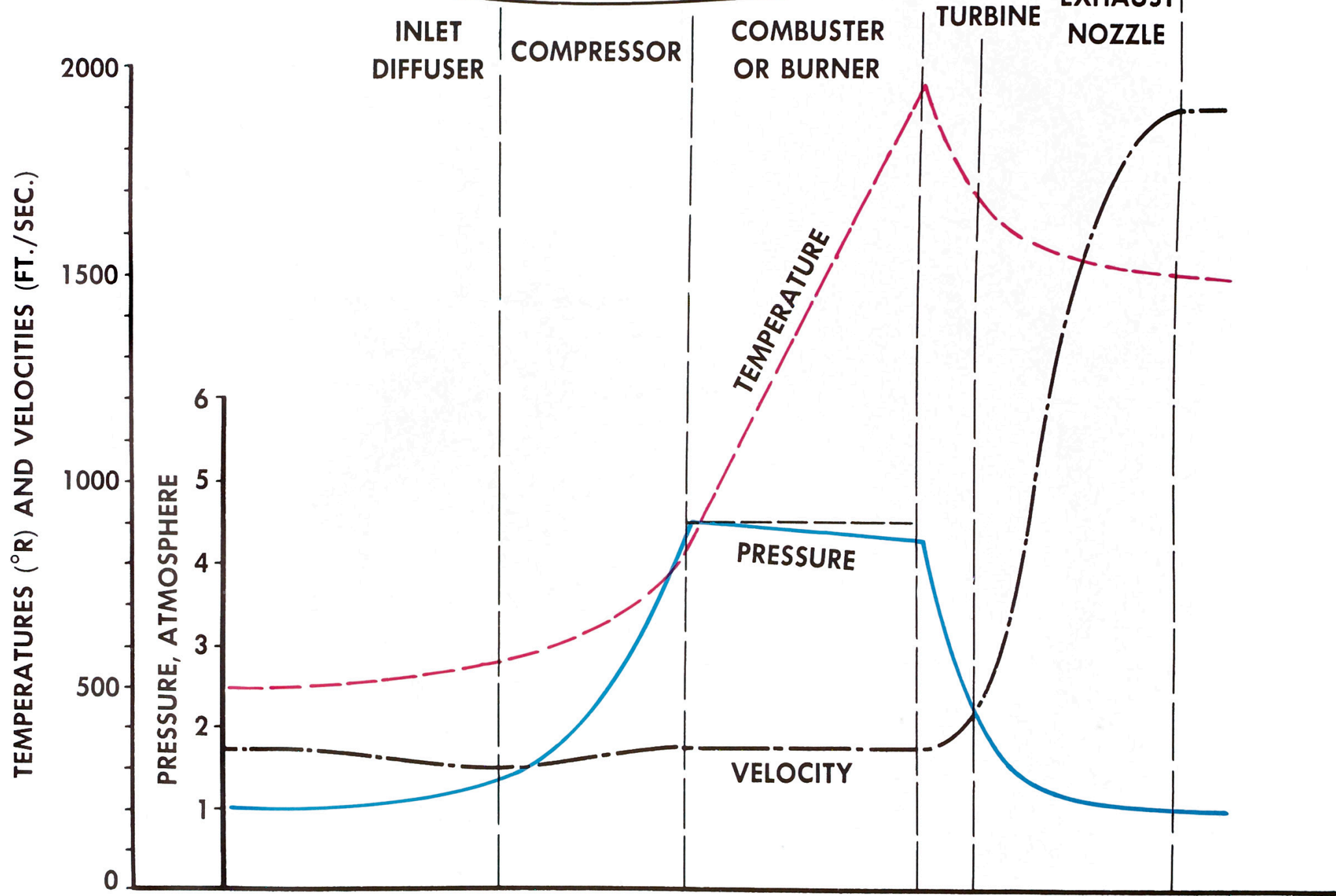
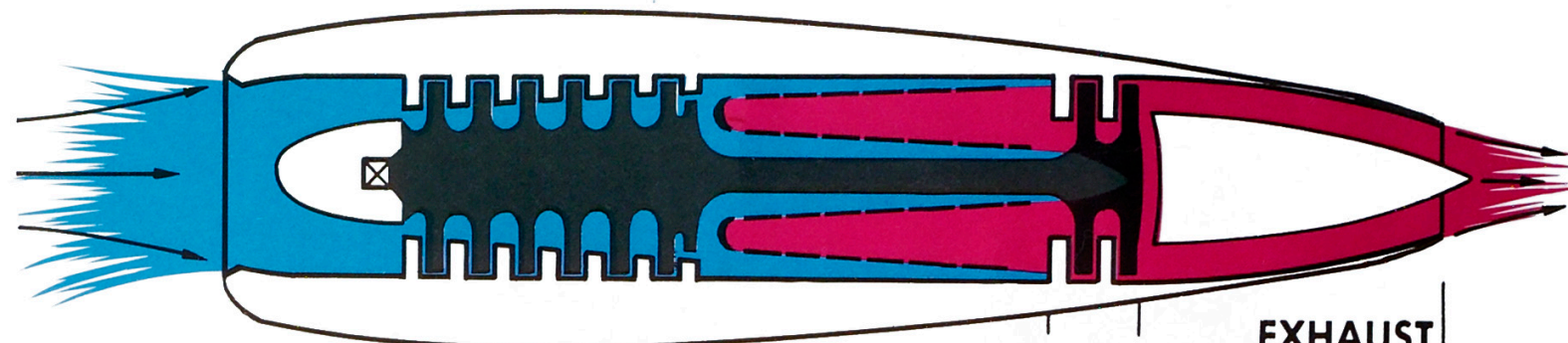


# J46....turbojet engine



**AVIATION GAS TURBINE DIVISION**  
**Westinghouse Electric Corporation**

**P. O. Box 288 • Kansas City, Missouri**



**TEMPERATURE, PRESSURE & VELOCITY VARIATIONS  
For A Typical Axial Flow Jet Engine**

# Warrior

## AGT Delivers 2,948th J34 Built in Kansas City

### 1,600 See Movie On Resuscitation In 2-Week Period

More than 1,600 persons in the Greater Kansas City area were shown the movie, "Rescue Breathing," during a recent two-week period, through the efforts of the Company and employees of this Division. The 20-minute film demonstrates the new mouth-to-mouth method of resuscitation. Numerous employees who saw the educational movie at the Plant last year expressed interest in showing it to others in the community. The Education and Training Section of Industrial Relations arranged to borrow the film and made it available for such distribution. A projector, screen and sound equipment were furnished by AGT.

Persons of all ages saw the film in church groups, Boy and Girl Scout troops, school classes, boat clubs, homeowners' and neighborhood gatherings, the Astronomy Club, a 4-H Club and the Raytown Police Department.

### Many AGT Employees Helped

AGT employees who conducted out-of-Plant showings in the community are: Kenneth Whitchurch, Department 42; John Walden, Electrical Maintenance; Jack West, Department 200; Harold Toohy, Progress Control; L. D. Reinhardt, Experimental Test Cells; J. J. Shaughnessy, Accounting;

M. Brubacher, Quality Control; G. O. Dobbins, Accident Prevention; N. J. Meredith, Education and Training; C. Cason, Department 42; Harold Coy, Department 44; C. M. Woods, Engineering; Al McCoy, Toolroom; Amos Landis, Department 40; and D. L. Montgomery, Plant Protection.

### Jeffries Elected To Head Veterans

Brady Jeffries last month was elected to succeed Paul Alm, Department 42 Foreman, as president of the Kansas City chapter of the Westinghouse Veteran Employees' Association.

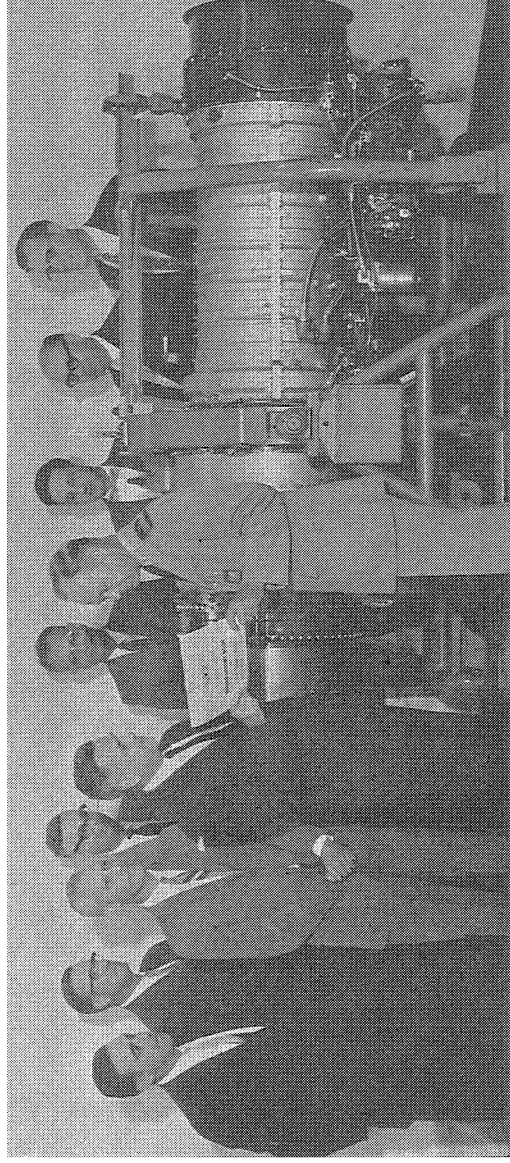
Mr. Jeffries is Office Supervisor at the Westinghouse Missouri Valley District offices, at 101 West 11th Street, and has worked for Westinghouse in Kansas City for 38 years.

New officers were installed at the group's annual dinner meeting at the Golden Ox Restaurant. Men who qualify as new members by accumulating over 20 years of Company service during 1960 were introduced.

They are: Paul Ashe, Traffic; Jack Cannon, Manufacturing Engineering; Jim Williams, Accounting; A. W. Courtney Jr., A.D.D.; D. R. Hiestand, Industrial Relations; Henry Hanzlik, Engineering; Ben Gerber, Test Cells; and Charles Kopp, Experimental Shop.

Other officers installed: E. W. Harvey, vice president; W. J. Van Oosterdiep, secretary; R. L. McClelland, treasurer; P. A. Cresson, L. E. Risinger and G. Wisegarver, directors.

**CONTRACT COMPLETED**—The log book for the J34 engine 661 was presented last month by Manager of Operations R. S. Huested to Commander Richard W. Fleck, Bureau of Naval



Weapons Representative. Delivery of this engine to the Navy completed the J34 engine production contracts. Witnessing event are other members of operating committee at AGT Plant.

### G. Dobbins to Head Two Safety Groups

Glenn Dobbins, Supervisor of Accident Prevention, has been named to head two safety organizations in the Greater Kansas City area.

Mr. Dobbins was elected chairman of the Kansas City chapter of the American Society of Safety Engineers at a meeting at Hotel Pickwick last month. He previously served as vice chairman and program chairman of the group. He also was voted general chairman by members of the local Veterans of Safety chapter.

He joined the Division in 1949 and has been active in safety and accident prevention work for over 18 years.



Glen Dobbins

### Convention News Service

Big things are expected to happen when this country's "really big shows," the national political conventions, get under way this month; and AGT employees will not miss the action while they are at work.

An AGT Convention Bulletin service plan has been set up to keep employees informed on significant occurrences as soon as they happen at both of the conventions.

Broadcasts on the CBS network will be monitored at the Plant. News bulletins will be immediately relayed by in-Plant phones to numerous locations throughout shop and office areas. Bulletins will be typed and posted within minutes after initialtion, Accounting, Works Engineering.

Westinghouse will sponsor both 1960 conventions on CBS-Radio and CBS-Television networks (KCMO and KCMO-TV, channel 5 in Kansas City). The Company's new trademark and logotype ("signature") will be introduced on our commercials at this time.

The Democratic convention opens in Los Angeles on July 11. The Republican convention starts in Chicago on July 25.

"Tune in" on AGT's Convention Bulletin service at these Plant locations: Columns Q-4, Q-23, R-16, V-34, K-17, H-32, E-30, Y-12, Y-26 and TA-44½. Office lobbies, Main Lobby, Purchasing, Production, Reproduction, Accounting, Works Engineering.

### Parts Schedules List More Than 2.6 Million Items

Production of J34 turbojet engines was completed last month when the Division delivered J34 WE-48 engine number 661 to the Navy ahead of schedule. It was the 2,984th J34 engine built here.

Manufacturing activities at AGT are now concentrated on the production and delivery on time of more than 2.6 million individual spare parts items which have been ordered by the Navy. These parts are required for maintenance and overhaul activities in support of flight operations of J34 powerplants in North American T-2J jet trainer aircraft.

The June shipments of engines marked the wind-up of production of various models of the Westinghouse J34. This well-known turbojet has been produced at the Kansas City Plant since January 1950.

### 'Pioneers' on Hand

Several employees who had helped built the initial engine here were on hand to witness final testing and assembly number 661. Many others expressed pride in being part of the team which participated in carrying to completion the engineering task.

Just prior to "canning" number 661 in a shipping container, photographs were taken of various groups which had requested commemorating the milestone.

Photographs were made of employe groups representing Test Cells, Assembly, Engineering staff, Metallurgy, Development Tests, the Project, Design and Controls Sections of Engineering, Manufacturing Staff, Manufacturing Engineering, Quality Control, Materials Control and Works Engineering.

### Strader to Head Testing Society

Louis Strader was elected chairman of the Kansas City chapter of the Society for Nondestructive Testing.

Strader was elected secretary at a meeting at Ridgeview Country Club last month.

Mr. Strader previously served as vice chairman for the past two years. He is Supervisor of Nondestructive Testing in Quality Control at AGT.

Virgil Wise was elected secretary-treasurer of the testing group. Mr. Wise, Supervisor of Receiving-Inspection, was program chairman last year.



Louis Strader

### Sarles Gets Fellowship

Peter Sarles, Manager of Materials Control, left Kansas City last month to begin a year of advanced study at Massachusetts Institute of Technology under the Alfred P. Sloan Fellowship program of executive development.

### 'Well Done' for Division

DEPARTMENT OF THE NAVY  
BUREAU OF NAVAL WEAPONS REPRESENTATIVE  
IN REPLY REFER TO:  
HW-2-7-01-01-16  
4904  
Serial A-279

Westinghouse Electric Corporation  
Aviation Gas Turbine Division  
P. O. Box 288  
Kansas City, Missouri

Gentlemen:  
The ability of your organization to successfully carry out its contractual commitments has again been demonstrated to this office.

All engines and spare parts have been received by the Navy in accordance with contract delivery dates for the past 14 consecutive months. Shipment of J34-46-48 engine No. 661 marked completion of Contract NOA(e) 59-02211 some six weeks ahead of schedule.

Achievement of this goal could not have been reached without foresight, careful planning, and conscientious effort on the part of all personnel concerned. This action certainly merits our recognition.

I wish to commend the entire Westinghouse AGT Division on its excellent performance in meeting delivery schedules. Please accept my congratulations for a job well done and extend my personal appreciation to each worker who had a part in achieving this goal.

I am confident that AGT personnel will continue this fine performance in manufacturing and shipping on time the substantial quantity of spare parts scheduled for delivery during the months ahead.

Sincerely yours,

*R. W. Flick*  
R. W. FLICK  
Commander, USN

Bureau of Naval Weapons Representative

**WELL-DESERVED HONOR**—Reproduced here is a letter of commendation that was recently received from the Bureau of Naval Weapons, Kansas City Office, complimenting the Division on its excellent delivery record. As we go to press, all engine and spare parts have been delivered on schedule for a period of 14 months in a row.

## Vapor Trails

Published monthly by the Employee Services Department for employees of the Aviation Gas Turbine Division and for members of their families.

### Executive Staff

VERN JANSSEN, Editor  
Gen Kracht, Secretary  
Ext. 376

### Editorial Staff

Carroll (Gubby) Bower, Engineering, 424; Maggi McGhee, Manufacturing, 224; Jim Arnold, Property Administration, 131; Gloria Spitzkeit, Department 41; Herschel Ferris, Order Service, 334; Dr. W. W. Gist, Plant Physician; Walter Crowley, Materials Handling, 595.

### Special Staff

Marvin Talcott, Photographer; Jim Clifton, Plant Photographer; Joe Fields, Cartoonist; Clara Knapp, Poetry.

## Editorial

# Make Safety Part Of Your Vacation

Here we are, right in the middle of vacation time! This is the time to relax, forget your cares, leave your job behind and enjoy the pleasures that only the Summer season can offer. You may strike out for the open highway on a trip; or you may just stay at home and finish that current do-it-yourself project.

When you go on vacation, it's customary to leave everything about your job at the Plant. However, there is one thing about your job that should be taken along — your "safety-consciousness."

It can be the handiest item in your vacation plans, because the chances of getting injured are much greater off the job than while working. You should keep your good thoughts of safety with you at all times.

### Stay Alert on the Road

When you are driving an automobile, the danger of accidents and injuries can be much greater than when you're running a machine at work.

If you are working in your home, remember that the machines and tools you use probably don't have nearly as many guards and safety devices installed on them as those you use in the Plant. You've got to be doubly careful.

Neither your supervisor, safety observer nor any other safety-conscious person is there to help you avoid hazards. The entire task is up to you.

During this time of year, children are out of school spending their carefree days at play. They haven't yet learned as much about preventing accidents as you have, and they are depending on you to watch out for them.

Injuries strike us when we least expect them, and we least expect them off the job or on vacation. So while you're having fun and relaxing, don't relax your safety habits and guards. Vacations should be fun, and it's no fun to break an arm, lose your vision, or lie in a hospital bed while others are out of doors having a wonderful time.

Whether an accident hits you on the job or off the job, it can cause just as much pain and trouble, and cost you just as much money. Take your safety habits along and have a happy vacation . . . without getting hurt!

## **B** Kansas City Section

# On the 'Death of a Dog'

(The letter reprinted below was written by John W. Morrison, Materials Control. It appeared recently in "Speaking the Public Mind," on the editorial page of the "Kansas City Star.")

After many years of apartment life in the city we finally purchased a home in the suburban area of Kansas City. Now our little girl, Darla Kay, had plenty of room to run and play.

Then came Winter with its resulting confinement and boredom for a little girl. That is when "Alvin," a little fox terrier, became a lovable member of our household.

But then Spring came and the grass began to brighten. Neighbors began to work in their yards. Unconsciously, competition sparked each household as neighbors vied for the nicest yard.

**Fertilizer, that's what I needed to make my yard green. The type I used came in an innocent-looking little bag. There wasn't any skull or crossbones on it. Nor was the word "poison" in evidence.**

Alvin is not with us anymore. Aldrin, an additive to some fertilizers, has taken a victim. How do you tell a five-year-old that through ignorance her daddy had killed her dog?

Mr. Lawmaker, when are you going to put controls on the many poisons that are used in the garden products that are manufactured today and the new ones which will come tomorrow?

**In some ways, you have excelled in your job. I know that my last bottle of liquor was 86 proof, aged at least four years, and that if I use the bottle for refill I could be prosecuted. The cold can of beer I had while watching television was not more than 3.2 per cent by volume because the can was clearly identified.**

Dear Lord, please help our little girl to forget her friend Alvin, and enlighten and guide our lawmakers in the enactment and enforcement of laws for the control and identification of the poisons that are available to the public on the market today. —JOHN W. MORRISON

## July

### Message



By JAMES A. ALLEN

**"He came unto His own, and His own received Him not."—John 1:11**

To be offered Christ and see no beauty in Him that we should desire him; to feel no thrill at being allowed to know and serve Him; to clap hands to our eyes in order to shut out this accursed light that we do not want and will not have; to shrink back into the dark because it is our native element and only in it do we feel really at home.

That is the most terrible of conditions, and the gravest of all judgments on a soul. Yet it can happen, and does happen. Hence that heart-gripping: "He came unto His own and His own received Him not."



## The Poet's Corner

### Summertime

By CLARA KNAPP

We have all kinds of weather in the Midwest, but the "good ole summertime" is what most folks like best.

Memories of Winter's heavy snows are finally beginning to fade, as we desert the fireside for a cool spot in the shade.

It's time for fishing and boating, swimming and baseball, too;

Living has moved out of doors, there're so many things to do.

Dad takes over his duties on the mower and outside grill,

He'll prove again to mom's delight his culinary skill.

Oh, we'll complain of the Summer heat as we wipe the sweat from our brow, but we wouldn't exchange it for the snow and sleet — would you now?

## R for Health

# Don't Attempt Self-Diagnosis

By W. W. GIST, M.D.

During the next few months there will be a great number of touring Americans on our roads and highways and a lesser — but sizable — number will be traveling in foreign countries.

Perhaps one would not classify Canada or Mexico as foreign, but certainly they are outside the Continental U. S. and the change in habits and customs is quite evident.

An important phase of any itinerary is your health consideration. To a certain extent this is taken care of by the Public Health Service, inasmuch as it requires certain immunizations before you can go to a foreign country.

At certain times you will be prevented from going because perhaps an epidemic of one disease or another may be brewing in the locale of your planned destination.

**Most important to the greatest number of people is the choice of a competent physician at a time of need. There are, of course, certain situations where you will have no choice because there may be but one physician available. In a serious accident, a choice may have to be made for you.**

In the latter instance, you may be more fortunate than you think. For example, one physician's estimation of another's ability is based on fact and experience. Most doctors are chosen because they have an office close by, or the neighbors recommend them or simply because the name sounds good.

If you are fortunate enough to be able to choose, a glance at the yellow pages in a phone book usually gives a listing of physicians by specialties. Naturally, you may not be able to categorize your illness, so call an internist. He can diagnose your complaints and treat or refer you.

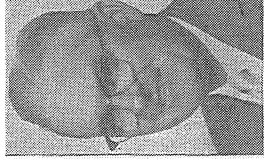
If there is no such listing in the phone book, you may call the nearest hospital, and ask the name of the "Chief of Medicine." No hospital however small, would have an incompetent man in such a position. Another approach would be to call the local city or county medical society for pertinent information.

**In the case of foreign travel, chances are that you will be within calling distance of an embassy or legation, which will be able to acquaint you with the local medical situation.**

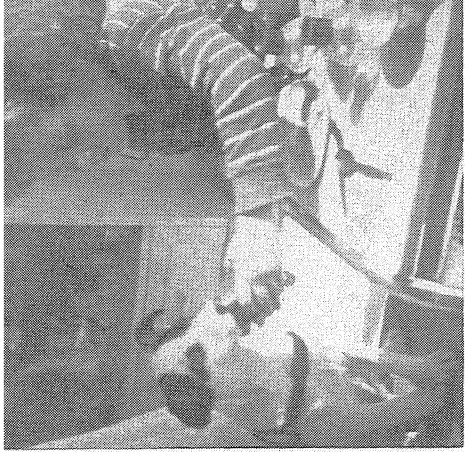
Fortunately, medical education throughout the world is on a high plane, although we feel that it is at its highest right here in the U.S.A.

It is no longer a fact that you have to have the "oldest and grayest" to get the best. Many of the younger men have been highly trained and are far more skillful than the "older and experienced" doctor.

Above all, don't try your own diagnosis and treatment on a condition which merits serious attention. Sir William Osler, the father of modern medicine, once said: "The physician who treats himself has a fool for a patient."



Dr. Gist



## CLUB DOIN'S

By Gloria

### Rifle and Pistol Club

Club members were hosts at a testimonial dinner party to the Douglas Aircraft "Pistoleers," of Tulsa, Oklahoma, on May 29. Visitors from Oklahoma were Mr. and Mrs. C. H. McKennon and family, Mr. and Mrs. Victor Jantz, R. W. Platt, and R. E. Gannon and son.

The group met the following day for a match at the Westinghouse shooting range. Weco was victorious, with a score of 2,169 to Douglas' 1,940. This was the third victory for the members, entitling them to regain possession of the coveted tombstone trophy.

It is interesting to note that the trophy is reversible. One side reads, "Douglas Employees' Recreational Activities, R.I.P.," and the other side reads, "You can be sure it's Westinghouse, R.I.P." Interpreted, this means "rest in peace."

The friendly kibitzing between these two company teams is constant, and they seem to thrive on it. "You can be sure" there will be a deep lasting friendship among these people.

Shooting for Douglas were C. H. McKennon, R. E. Gannon, R. W. Platt and V. Jantz. Westinghouse members were Pete Spadero, Dick Gentile, Wayne Folland, C. D. Sellers, A. L. Spurlock, H. M. Frazier, N. L. Frazier and A. Kvarve. However, only the scores of the first four mentioned members were used. A return match between the teams will be held in the near future.

### Camera Club

Eighteen camera fans attended last month's meeting. Jim Garrett, of Reproduction, was guest judge. Contest assignment was "Flowers."

In the black-and-white division, Ken Jones won first, second and third places.

First place for slides was won by Omar DeJarnett, with his entry of "A Red Rose." George Davenport was second with his "Flame Lily," and Omar DeJarnett scored again with "A Yellow Rose."

The group also viewed an Eastman Kodak film entitled, "Snapshots or Sorry," portraying the idea that if you missed the opportunity to get a good snapshot, you would be sorry.



SHARPSHOOTERS — Champ pistoleers, from left: W. Foland, D. Sellers, O. Nelson, A. Spurlock, D. Gentile.



## Drive Sparked By AGT Pair 'Saves' Courses

Two AGT men were instrumental in bringing about continuation of the University of Missouri's off-campus educational program of Executive Development, which will be resumed in Kansas City in September.

When classes were completed this Spring, little interest for next Fall was evident, and it appeared highly probable that the program would be discontinued.

Charles M. Woods, Section Engineer, Drafting and Technical Services, and John F. Thornberry, Engineer, Service Department, learned of this situation while on a special trip to Columbia, Missouri. Realizing their personal benefit gained through the studies, they made plans to prevent collapse of the program.

### Enlisted 'Chamber' Aid

They first enlisted aid and support from the Kansas City Chamber of Commerce. Messrs. Woods and Thornberry prepared a letter outlining values of the program, plus other promotional material, which was sent to numerous area firms.

Evidence of the increased interest which had been stimulated in this city was sent to the University by Herbert M. Wiggs, Chamber president.

A special ceremony was held June 11 on the University campus at Columbia to confer completion certificates on Kansas City students. During the services, Dr. Elmer Ellis, Missouri's president, announced that in response to popular demand the University plans to start a new three-year cycle of courses under the program next September.

## Dad's Safe Driving Saves Kittle Family From Bad Accident

By WALT CROWLEY

The value of taking safety along on vacations was dramatically illustrated recently by an AGT employee's experience.

L. E. Kittle, Materials Control, and his family were driving toward through Oklahoma after an enjoyable vacation. Mr. Kittle was observing posted speed limits and following at a safe distance behind a truck loaded with glass.

He noticed paper and other debris being blown from the truck ahead, and gave it only a passing thought. Suddenly a large mirror, about eight feet square, was blown off the truck and came hurtling toward his car.

The huge mirror freakishly turned sideways and fell immediately in front of his car on the highway. For a split second his only vision was a reflection of his car appearing to come head-on from the opposite direction.

He had three choices: First, hit the mirror head-on, thereby exposing his family to possibly serious (if not fatal) cuts from flying glass; second, take the ditch at right, possibly turning the car over, with resulting serious injury; and third, turn into the left lane, attempting to dodge the mirror. He chose the latter.

Just as he veered sharply to the left, the big mirror struck the pavement and exploded, sending up a shower of glass which blocked his view.

When the hundreds of pieces of glass cleared, Mr. Kittle saw another truck traveling toward his vehicle in the left lane. Each driver immediately applied his brakes, and the vehicles came to a stop only eight feet apart!

Mr. Kittle credits his safety to the few extra feet he allowed while following the glass-laden truck.

## Employee Receives 35-Year Award



**LONG RECORD**—Payroll Accountant Vince Lula (third from right) is shown receiving his 35-year service award from Vice President and Division General Manager W. W. Smith during a ceremony held last month. On hand for presentation of the award are, from the left: R. L. Shuman, Director of Accounting, Defense and Atomic Product Groups, Pittsburgh Headquarters; F. E. Dalton, Controller, Pittsburgh Headquarters;

N. A. Stough, Manager of Accounting, AGT; and R. D. Bell, Assistant Manager of Accounting, AGT. Mr. Lula began his Company career in 1925 at the East Pittsburgh Plant. He later worked at Trafford Foundry, Trafford, Pa., the wartime Cannon (Ohio) Ordnance Plant and Pittsburgh Headquarters. Mr. Lula came to AGT at Kansas City in 1949. He is a charter member of local Westinghouse Veteran Employees' Association.

## Know Yourself and Your Friends Better By Learning, Using Handwriting Analysis

By GUBBY BOWER

If you want to keep your personality and character a secret, it is best to use a typewriter. Amateur graphoanalysts are increasing in number, and someday one may analyze your handwriting which, to them, reveals your personal traits. As you have probably guessed by now, graphoanalysis is a term used for study of handwriting.

Your handwriting can't be used to predict the future or determine diseases, and it doesn't indicate the sex of the writer. But it does contain extensive indications about one's personal characteristics.

**Handwriting analysis is not a gimmick or a guessing game. The way people write is as revealing as the way they walk and talk, or the clothes they wear. Writing, in reality, is a function of the brain.**

Analysis of handwriting consists of taking each stroke, as it makes each individual character or letter, in combination with other strokes. These often reflect attitudes of the writer's brain at the time.

Experts contend that the same person will not write the same way twice in succession, because his mental attitudes do not remain constant. Since handwriting does reflect mental attitudes,

## Employee Offered Degree Equivalent

Several employees have brought to light an apparently little-known opportunity for persons without a high school diploma to earn an equivalent Certificate of Academic Achievement.

The Departments of Education of both Missouri and Kansas conduct a program called the General Education Development Tests for this purpose. Five examinations, requiring approximately 10 hours, are given over a two-day period.

Residents of Missouri may obtain further information on the program by writing to: Homer E. Bolen, Director of Supervision, Department of Education, Jefferson City, Missouri.

Kansas residents should write to: State Department of Education, Topeka, Kansas.

Joe Enderle and Frank Hope, well, both of Quality Control, recently were awarded the G.E.D. Certificate of Academic Achievement, and have stated that they will be glad to discuss the program. Both men are on extension 613.



**SEWING CHAMP**—Fran Speers, talented amateur seamstress who works in Industrial Relations, models prize-winning red cotton shirtwaist dress she made and entered in Grange-sponsored sewing contest. She won Johnson County (Kansas) class "A" first-place blue ribbon and right to enter state contest at Topeka.

## Alert Employee Recalls Movie, Revives Infant

William Meier, an electrician in Electrical Maintenance, successfully used the mouth-to-mouth method of resuscitation to save the life of a seven-month-old baby girl late in May.

He was quietly bathing at his home at 9905 Charlotte one evening after work when the drama began. The baby's mother, who lives next door, came to ask his wife for help in reviving her child. Mrs. Meier told her husband, who lost no time leaving the bathtub to lend a hand.

When he arrived next door, the little girl's face was discolored, her eyes were lifeless and she lay motionless. Bill immediately started the mouth-to-mouth breathing process.

Soon the infant's eyes moved, she smiled and began squirming. She was taken to a hospital for observation, and later was reported in good health.

### Prior Attempts Failed

Prior to Mr. Meier's arrival, other resuscitation measures had been attempted without success. This included a mouth-to-mouth effort, which had been administered incorrectly. He explained that the subject's head must be tilted backward and the nose must be held.

Bill credits his life-saving knowledge to seeing the movie "Rescue Breathing" at AGT several months ago. "I only did what I remembered seeing in the movie at work," he explained later.

Cause of the breathing stoppage was unknown. The girl's parents, Mr. and Mrs. Arthur Twilling, told Bill their daughter, Debbie, had been running a fever, and just stopped breathing.

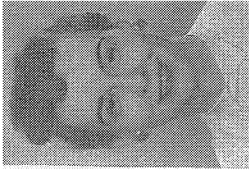
### Rescue Aids Available

Instruction sheets on the mouth-to-mouth resuscitation method, plus a comprehensive outline of pleasure boating equipment, has been prepared by the Kansas City and Jackson County chapter of the American Red Cross.

This material is available free to non-swimmers, boating enthusiasts and others interested in water safety. Persons wanting this valuable information should phone the First Aid and Water Safety Department, at HA 1-2341, or go to the local Red Cross office, at 417 East 13th Street.

## Gen Kracht Fills Key 'Trails' Post

Secretarial duties now come in pairs for Gen Kracht, who recently joined the "Vapor Trails" staff. In addition to her regular duties as a secretary in the Budgets and Systems Department, she also carries out the job of secretary for this publication.



Gen Kracht

Gen is a native Kansan and a graduate of the University of Kansas, with a degree in psychology. She commutes daily to AGT all the way from her home in Leavenworth, Kansas. Her husband is an accountant there.

She joined AGT in 1954 as a secretary in Engineering, and has since worked in the same capacity in various other departments.

one of its most important uses is to monitor the progress of an individual, such as a problem child.

In industry, handwriting analysis is commonly used to determine the type of position for which a job applicant is best suited. It has been used in the same manner as a part of compatibility studies of couples preparing for marriage. Handwriting analysis, especially in France and Germany, is also widely used in the field of criminology.

**So if you have idle moments for your hands and are looking for an interesting hobby, the chances are good that you will become fascinated by handwriting analysis.**

The materials are free, and often found in your wastebasket. It can be entertaining and fun, and can help you know more about yourself and your friends.

Samples of basic elements in handwriting are illustrated at left. For those of you who would like to read more on this subject, an abundance of literature is available at any library or bookstore.

## Heath Appointed To Research Post

Frank R. Heath has been appointed Supervising Engineer at the Westinghouse Research Laboratories in Pittsburgh. He will be in charge of computing equipment and the programming staff in the Mathematics Department.

Mr. Heath was Advisory Engineer in Preliminary Design-Engineering at AGT. He joined Westinghouse at Philadelphia in 1951, and came to Kansas City as Supervisor of Computing in 1955.

He has a Master's degree in mechanical engineering from the University of Pennsylvania and a Master's degree in business administration from the University of Missouri. Mr. Heath formerly was vice president of the Johnson County Planning Council here.

## Families Picnic

Some 55 Materials Control Section employees and members of their families attended a Saturday afternoon picnic party at Wildwood Lake in Raytown last month. Refreshments were served, and sports, games and fishing activities were conducted.

Arrangements for the outing were handled by A. G. Porter, Superintendent of Materials Control.

# SPORTS SPOTLIGHT

by **HERSCH**

## AGT Fishing Contest

Again displaying her skill in landing prize-winning catches, Sadie Williams, wife of A. J. Williams, Works Engineering, reports catching a 10-pound channel catfish at Lake Olathe. Rod-and-reel and worms were the winning combination.

Mr. Williams had registered for the AGT fishing contest, thereby automatically including all members of his family. Other fishermen please note—Sadie Williams now has two citations to her credit for reporting the largest channel catfish for the months of April and May.

With catches for the best bass-fishing months (June and July) yet to be reported, it's anyone's guess as to the size of the fish that will end up a prize winner. The same goes for the crappie and bluegill divisions.

## 65-Pounder—Not Entered

Charles Tignor, Department 40, and his grandson, Gene Howard, landed a 65-pound catfish—but Charles had forgotten to register in the Fishing Contest.

This one would have taken all kinds of prizes in any contest but the real thrill of landing a big one still belongs to Charles and Gene. Fishing on the Pomme de Terre River, near Fairfield, Missouri—using a small perch on a limb line—they noticed that the surrounding brush was pretty much torn up as they approached one of their pre-baited limb lines.

After a struggle which almost upset the boat, they managed to net their big catch and head for home. Needless to say, both of them were beaming all over when they pulled in to the dock with their prize. They expressed regret at not being entered in our Fishing Contest.

## Hole-in-One for Hopewell!

Congratulations to Frank Hopewell, Quality Control Engineering, who made his first hole-

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in-one on the 210-yard, par-three 14th hole at Stayton Meadows on June 12.

Witnesses to the feat were Floyd Hackett and John Welch, also from AGT Quality Control. Incidentally, for those who want to try their skill on No. 14 at Stayton, Frank used a No. 3½ wood.

## Sense of Humor Helps Fishing Club Stay 'in Business'

By WALT CROWLEY

What began as a friendly fishing trip in 1951 soon developed into a close-knit, highly-organized fishing group that has spanned more than nine years and made veteran anglers of its four members.

Larry Kittle, Frank Browne, Bill Hanlon and Harold Aylsworth, all of Materials Control, made the initial venture together to Lake of the Ozarks and later formed a club called the F&B Corporation.

The original purpose was to share expenses on subsequent outings. Bylaws were drawn up and officers voted themselves honorary titles denoting special functions. Frank is "president" and bored chairman, Larry is "treasurer and exchequer," Bill is "technical adviser and strategy co-ordinator," and Harold is "chaplain."

When confronted with the problem of dwindling funds, the quartet decided to donate all proceeds from bowling activities. Special projects—such as stock investments and business ventures—also were utilized to help finance fishing expeditions.

Longevity and success of the club are attributed to a good-natured sense of humor. It sprang up early and helped keep spirits of the four disciples of Izaak Walton high.

The F&B Corporation members have enjoyed numerous fishing trips over the years. The most recent, which took place in May, was representative of several previous efforts. Results were reported in unison by all four participants, who chorused: "The chaplain was a busy man."

## Starlight Theatre Offers Fine Array Of Big-Name Stars

Starlight Theatre's 1960 parade of hit shows and big-name stars is rolling into its second month of enjoyable outdoor Summer entertainment at Swope Park.

Gordon and Sheila MacRae, Starlight box-office champions last year, star in a two-week run of "Annie Get Your Gun" (July 4-17). John Raitt headlines "The Pajama Game" (July 18-24) in the role he created with the original Broadway cast and in the movie.

Bill Hayes, a proven favorite here and well known for his singing on various television shows, has the lead in "The Student Prince," playing July 25 through the 31st.

Patrice Munsel, rated by critics as one of the all-time great American singers, will make her first Starlight appearance in "Merry Widow" from August 1 to 7.

Coupon books which can be exchanged for tickets to any Starlight show are available to AGT employees for only eight dollars at the Information Services Office, extension 376. They are good for tickets worth a total of \$10.



Patrice Munsel

## 'Best Student' Title To Employee's Son

Allen Morris, age 18, was presented the "best all-around student" award by Oak Grove High



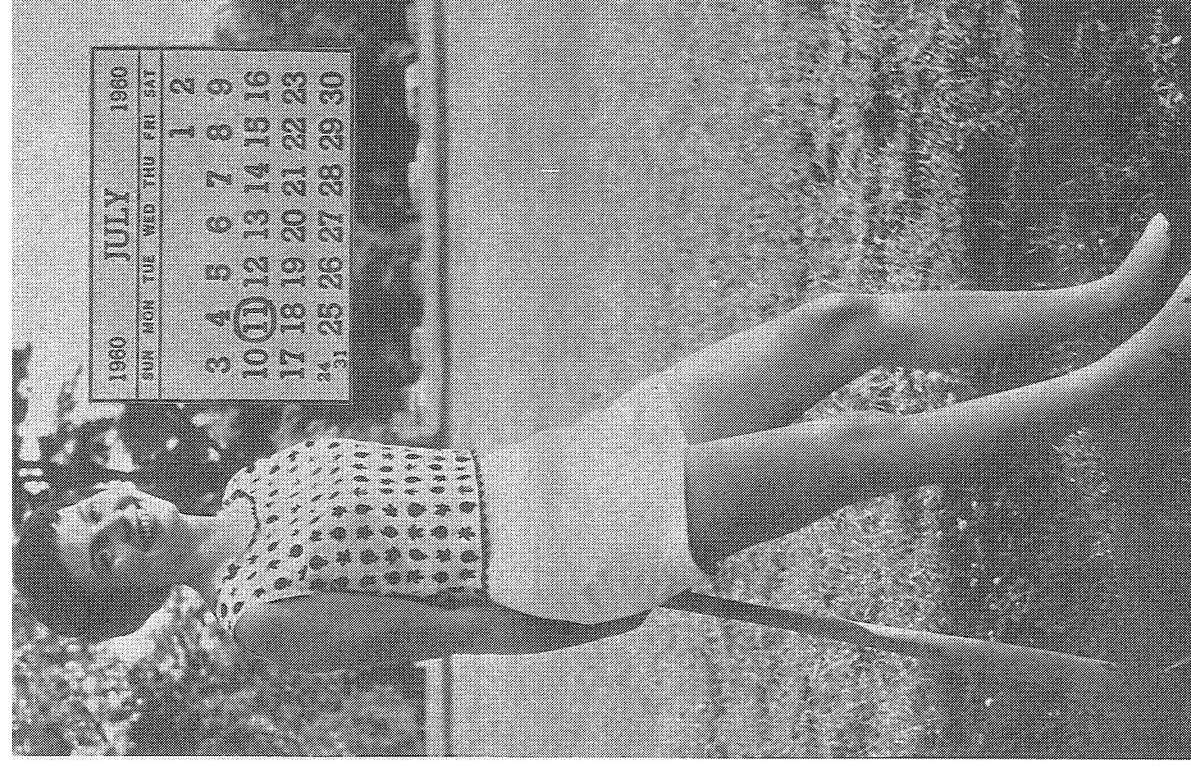
Allen Morris

School at commencement exercises last month. The honor is based on achievements in scholastic, sports and extracurricular activities throughout the four-year school period.

He is the son of Dorothy Foltz, Spare Parts Technical Section, Contract Administration Department.

Allen was vice president of his senior class and served as class president the preceding year. He won letters in track and set bowling league marks. Allen also was appointed a nominee to the Air Force Academy this Spring and holds memberships in the National Honor Society and the Science Club.

## Our Calendar Girl for July



PLAY BALL!—Our "Vapor Trails" calendar girl for this month, Joyce Donovan, a secretary in Material Control, has circled the day of the big All-Star baseball game on calendar. Besides being an enthusiastic fan, she's our candidate for the team.

## Classified Ads

Use of this column is free to all AGT employees for ads of a non-commercial nature.

### FOR SALE

**Lawn Mower** — Rubber tires, push-type, fair condition. \$5. Call SO 1-2147 after 5 P.M.

**Window Screens**—Ten all-aluminum window screens, various sizes. Used approximately one month. Call SO 1-2147 after 5.

**Cabin and Lot**—Improved lot with furnished, 14-by-20-foot cabin. Located eight miles west of Warsaw, Missouri, on Grand River. Call SP 1-5344 after 5 P.M.

**Intercom** — RCA inter-office communications system. Ten units with pushbutton stations, phone-type, battery operated. Any offer considered. Call NI 8-7577 after 5 P.M.

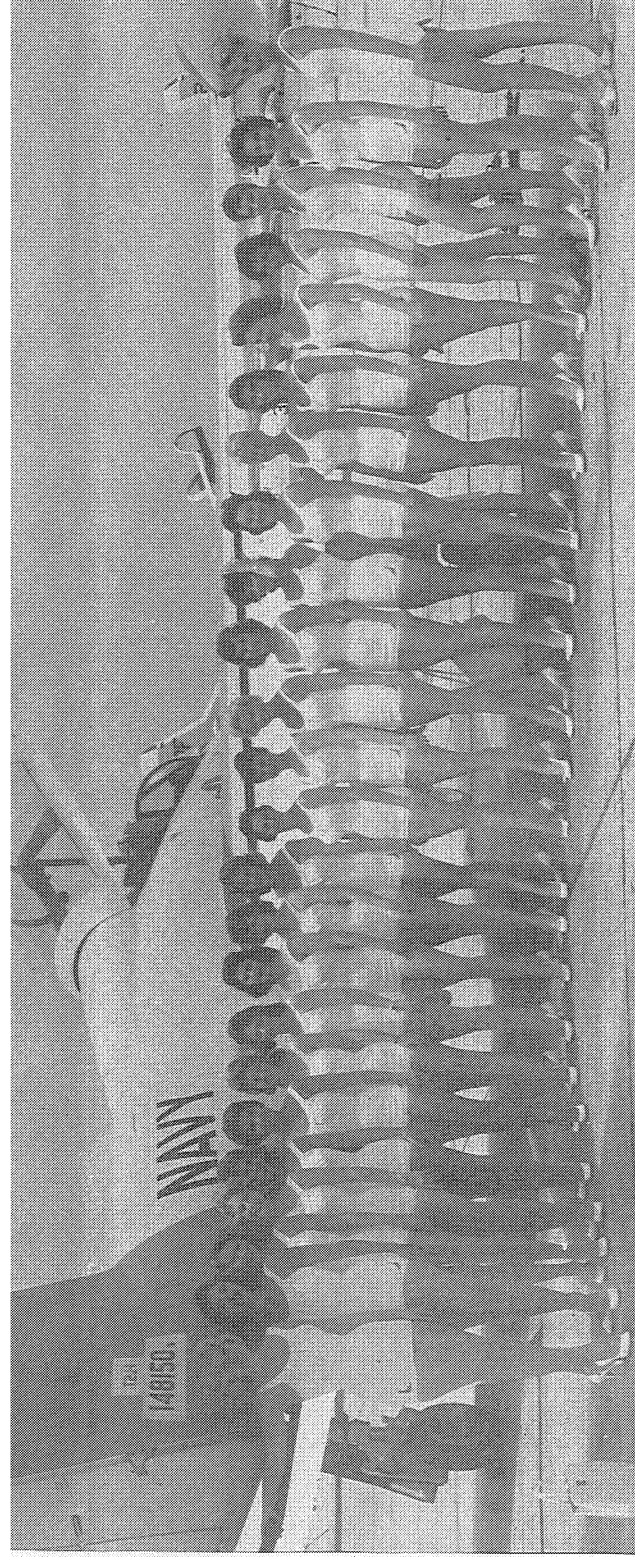
## Navy Officers, Civilians Complete Survey Here

Navy officers and civilian officials completed an annual off-day comprehensive survey of operations at the Plant last month. The series of meetings was conducted with various members of the AGT Navy offices.

Visitors from the Bureau of Naval Weapons General Representative-Central District, Wright-Patterson Air Force Base, Ohio, included:

Commander J. H. Sims, Commander H. R. Riveland, Lieutenant Commander A. R. Schuknecht, F. R. Link, E. L. Wood, Dorothy Hayes, H. L. Fore, E. Marchio, R. M. Bush and J. E. Shroeder. Captain G. L. Gilbert, Supervising Inspector of Naval Material-Central District, Chicago, accompanied the group.

## 'Fiesta Girls' Give Trainees a Pause That Refreshes



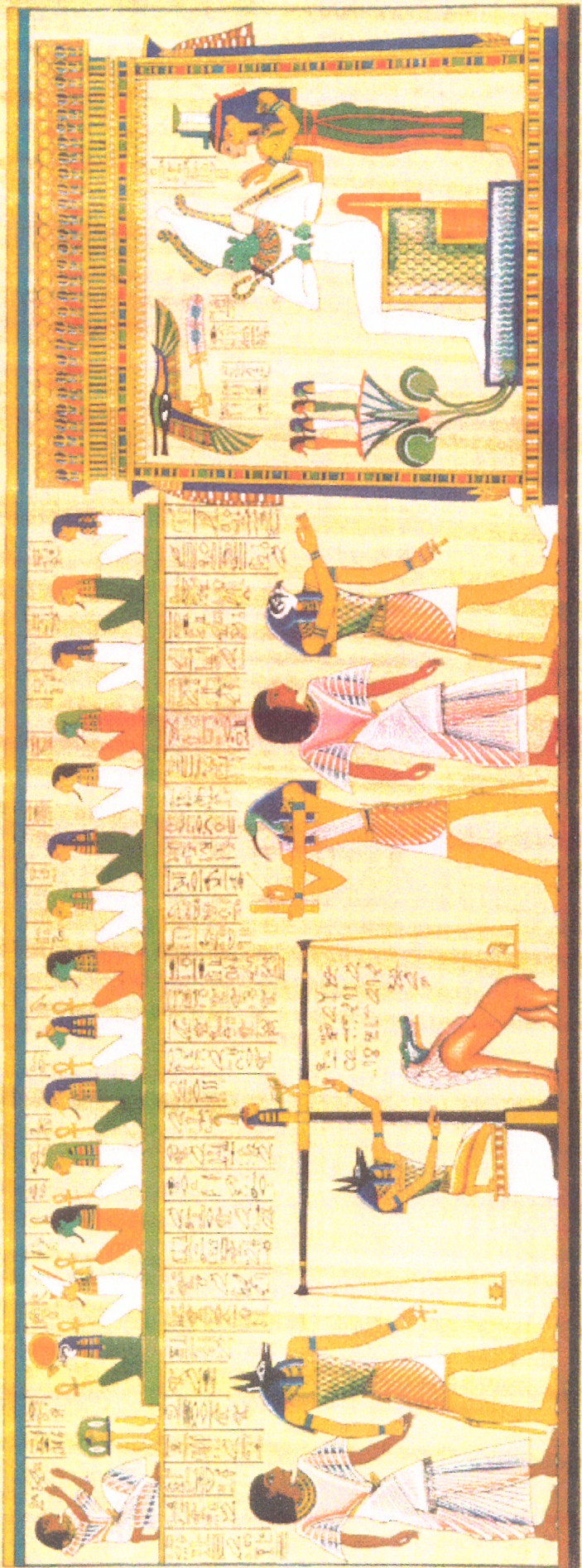
THIS IS NAVY DUTY?—Westinghouse J34-powered North American T2J jet trainer enjoyed pleasant company at NAS in Pensacola. Navy student-pilots temporarily halted training while 24 visiting "Fiesta of Five Flags" beauty contestants made this

formation along wing of the aircraft. A jet gunnery program using T2J planes recently was initiated by Training Squadron VT-4 at Pensacola. Pilot training in the T2J is also planned to start this month at the Kingsville (Texas) Naval Air Station.

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## Papyrus Story

One of the earliest records of precise measurement is from Egypt. The Egyptians studied the science of geometry to assist them in the construction of the Pyramids. It is believed that about 3000 years BC, the Egyptian unit of length came into being.

The "Royal Egyptian Cubit" was decreed to be equal to the length of the forearm from the bent elbow to the tip of the extended middle finger plus the width of the palm of the hand of the Pharaoh or King ruling at that time.

The Royal Egyptian Cubit Papyrus



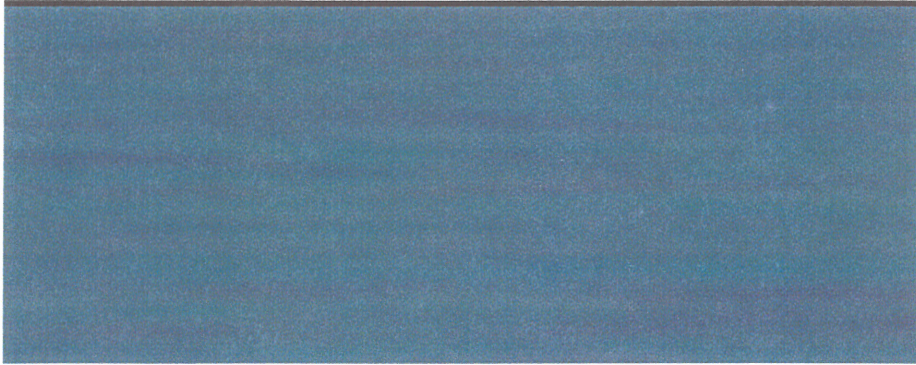
The Royal Cubit Master

The "Royal Cubit Master" was carved out of a block of granite to endure for all times. Workers engaged in building tombs, temples, pyramids, etc. were supplied with cubits made of wood or granite. The Royal Architect or Foreman of the construction site was responsible for maintaining & transferring the unit of length to workers instruments. They were required to bring back their cubit sticks at each full moon to be compared to the Royal Cubit Master.

Failure to do so was punishable by death. Though the punishment prescribed was severe, the Egyptians had anticipated the spirit of the present day system of legal metrology, standards, traceability and calibration recall.

With this standardization and uniformity of length, the Egyptians achieved surprising accuracy. Thousands of workers were engaged in building the Great Pyramid of Giza. Through the use of cubit sticks, they achieved an accuracy of 0.05%. In roughly 756 feet or 9,069.4 inches, they were within 4 1/2 inches.

The Story of the Egyptian cubit and Papyrus were presented to Ed Nemeroff, NCSL International, VP International Division, by Professor, Dr. Mohamed El-Fiki, President of the Egyptian National Institute for Standards during the US - Egypt Bilateral Workshop on Metrology, Standards & Conformity Assessment, held in Alexandria Egypt in June, 1996. The workshop was co-organized by NIST & NIS.



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