

AERONAUTICS

Parasitic Fighter Plane Protects Its "Mother"**See Front Cover**

► THE AIR Force's giant long-range bomber, the RB-36D, has been adapted to carry a protective fighter plane along with it on intercontinental reconnaissance missions.

Attached to the "mother" plane, an F-84 Thunderjet and its pilot can be dispatched quickly should the enemy challenge the big bomber in flight.

The speedy little jet fighter can be "retrieved" in flight by the mother bomber after the emergency is past.

The modified F-84 as it nears the retrieving mechanism is shown on the cover of this week's SCIENCE NEWS LETTER.

Air Research and Development Command headquarters in Baltimore report that the mother bomber and parasitic fighter have been modified to enable them to take off and land as a single unit. Tests at the Command's Wright Air Development Center at Dayton, Ohio, have revealed the feasibility of the unique operation.

This is the first time that a full-sized combat aircraft has been adapted to operate with another airplane as its base. Previous "piggyback" attempts have produced airplanes that can launch others. But until now these "mother" planes could not serve as flying landing fields for their "offspring."

The new arrangement is designed to provide protection and "high probability of survival for personnel and equipment" aboard the big plane. Begun in 1950, the project reached public fruition Sept. 5 to 7, when the plane was demonstrated at the National Aircraft Show in Dayton.

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GEOPHYSICS

Rockets Ballooned Aloft; Fired Upward 50 Miles

► ROCKETS ARE now carried about 10 miles into the air by means of balloons and then fired to an altitude of over 50 miles.

This new and inexpensive method of probing the upper atmosphere was described to the International Conference on Upper Atmospheric Research held in Oxford, England, by Dr. J. A. Van Allen of the State University of Iowa.

As much as 30 pounds of apparatus have been sent to higher altitudes by the balloon-rocket combination. Lifting the small instrumented rocket to some 50,000 feet altitude by means of a balloon eliminates the resistance of the lower atmosphere that rockets launched from the surface of the earth have to overcome.

The method has already been used for cosmic ray studies in the far north regions near the north magnetic pole of the earth.

Scientists expect that with this new combination they will be able to make many more measurements of the upper atmosphere, and thus get a better picture of what happens there to influence our weather and climatic conditions.

The next decade should see rockets rising a thousand miles or more above the earth, reports from a group of scientists from the U. S. Naval Research Laboratory indicated. Milton W. Rosen and Richard B. Snodgrass reported that in the last few years sounding rockets have increased altitude records tenfold. They bid fair to produce a similar increase in the next 10 years.

Twenty-nine tons of scientific instruments have been carried to altitudes between 30 and 136 miles in the last few years in the shoots from White Sands, N. Mex. The principal high altitude sounding rockets in use today are the Aerobee and Viking, since all the WAC Corporals and the captured German V-2 rockets have now been expended.

The sounding rocket is the ancestor of future space vehicles, the scientists explain, and it is a significant step in extra-terrestrial exploration.

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TECHNOLOGY

Laundered Clothes Get Germs While Drying

► SOME HOSPITALS and commercial laundries need to rearrange their plants to keep washed and practically germ-free articles from getting germy again while they dry.

University of Chicago studies showing this are announced by Dr. Clayton G. Loosli of the medical school research center and Brooks D. Church, formerly of the university's staff.

Their tests showed that germs in the dirty laundry were largely disposed of in the washing. However, the bedding became reinfected with germs floating in the laundry air during the water extraction process, while the blankets were hung in the laundry to dry, and during folding and packaging after ironing.

The source of the germs in the air was found to be from the unwashed bedding where the bacteria were dispersed into the air when the soiled laundry was sorted just before washing.

Dr. Loosli and his associate point out that many of the germs which settle out of the laundry air onto so-called "clean linen" are disease producers, and thus may find their way back into hospitals, military barracks, hotels and homes.

In the construction of hospital and commercial laundries, appropriate partitions and ventilating systems to keep the air clean can prevent laundered clothes from becoming soiled after they are washed. These methods can prevent the spread of some disease which may be acquired through contact with the washed but "unclean" linen.

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IN SCIEN

CHEMISTRY

Amino Acid Plus Sun Gives Milk Off-Flavor

► THE CAUSE of the unpleasant flavor and vitamin loss that develop in milk standing in daylight in ordinary glass milk bottles for half an hour or more has been discovered by Drs. Stuart Patton and Donald V. Josephson of the Pennsylvania Agricultural Experiment Station, State College.

The "sunlight" or "activated" flavor, they find, develops because methionine, one of the amino acids in the milk, is changed chemically under the action of solar energy. This sun-activated effect is intensified by the B vitamin, riboflavin, which is also a natural constituent of the milk. In the course of the reaction, a substantial portion of the riboflavin is destroyed.

Most of the vitamin C in milk is also destroyed when the milk in ordinary glass milk bottles is exposed to daylight for a half hour or more. Whether this is related to the methionine change or is a separate effect of light on the milk is not stated in the report in *Science* (Aug. 21).

Discovery of the methionine-light-riboflavin reaction as cause of "sunlight" flavor came from the discovery that dilute solutions of methionine in water, when exposed to sunlight, developed a flavor that seemed identical with the "sunlight" flavor of milk.

The scientists then added a tiny bit of methionine to skim milk and found that the "sunlight" flavor was greatly increased when the milk stood in the light. Further tests, with three experienced judges testing the flavors, were then made.

The specific nature of the change in methionine under the action of sunlight and riboflavin is now being investigated.

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ELECTRONICS

Need Mississippi River to Cool Human-Like "Brain"

► MOST OF the Mississippi River would probably be needed to get enough water to cool an electronic "brain" as capable as a human brain.

And it would take a Pentagon-sized building to house the machine. The building would be crammed with wiring and tubes, and would use up as much electrical power as that consumed daily by this city, servo-mechanism engineers at Minneapolis-Honeywell estimate.

Capable as electronic "brains" are, the engineers stress, they do not come close to matching the human brain. The most elaborate models may some day equal an ant's brain, however, they estimate.

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CE FIELDS

ENTOMOLOGY

Army Worms Nuisance In South and Midwest

► ARMY WORMS are making new gains in their concerted attack on the nation's grain fields.

The fall worms have dealt serious injury to late corn in Maryland, infesting up to 35% of the stalks in some parts. Tennessee also reports some heavy corn damage. Louisiana alfalfa, notably in the Shreveport area, is succumbing to the army-worm onslaught. And the fight is on in Kansas, too. But Oklahoma, hardest hit of all, is overrun by the pests—over two-thirds of the state has been invaded.

The yellow-striped army worm is reported on the march in northern areas of Utah, thus making the army-worm invasion widespread.

The farmer fortunately has means of defense against these grain plunderers: toxaphene, an effective insecticide, or methoxychlor, another good insecticide with the advantage that it can be used on animal-feed crops, since it does not affect the meat or milk of animals that accidentally eat it.

Actually, army worms are the young or larval stage of a small brownish moth, *Cirphis unipuncta*. Once they change into moths, they are harmless.

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GENERAL SCIENCE

Key Technical Personnel In Military Reserve

► APPROXIMATELY ONE-FOURTH of the 10,000,000 men of the nation's military reserve, consisting of those who have had military training and service, occupy key posts in essential industry, a survey by the Scientific Manpower Commission shows.

Quick mobilization could thus wreck vital industrial operations as these men are withdrawn from production and research, should there be a total mobilization, Dr. Howard A. Meyerhoff, president of the Scientific Manpower Commission, Washington, pointed out in an analysis of the situation. All of the reserve could be immediately recalled into the Army, Navy and Air Force in an emergency.

Highly skilled engineers, scientists, technicians and mechanics are needed to keep the armed forces supplied, mobile and powerful, Dr. Meyerhoff emphasized. Since the United States has the possibility of being inferior numerically to potential enemies, Dr. Meyerhoff contends that "we must counterbalance numerical deficiencies with technical superiority."

Urging that Congress enact the Johnson-Flanders bill to establish a national manpower board on specialized personnel that will hear appeals on the most effective use of reservists recalled to military duty, Dr. Meyerhoff said:

"We are pursuing an obsolete policy in our attitude toward brainpower, and, until our government places a higher value upon scientific and technological knowledge and skill, the safety of the nation will be endangered to a greater extent than we perhaps realize. In World War II our enemies were not so stupid, and, from all reports, neither are the Communists."

The Engineering Manpower Commission, New York, has found that there has been an alarming change in attitude on the part of Selective Service boards with reference to occupational deferments, and that the number of these deferments has dropped 16 2/3 percent during the past six months, notwithstanding the fact that the criteria for deferment have remained unchanged.

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ENTOMOLOGY

Insect Allies Battle Insect Pests on Farms

► ALL THE news is not black in the never-ending battle between man and insect pests. A recent report of insect pest conditions by U. S. Bureau of Entomology and Plant Quarantine field men shows insect allies are fighting for us against our six-legged opponents.

In California, large numbers of lady beetles are showing up in aphid-infested fields of cotton and reducing the pests' numbers. Already the lady beetles, *Hippodamia convergens* have successfully attacked bean aphids and walnut aphids in the state.

A spider mite infesting California cotton fields was counter-attacked by another beneficial insect, a thrips, *Scolothrips sexmaculatus*, and was beaten. Lacewings struck at harmful walnut aphids, while a tiny wasp, *Bracon xanthonotus*, cut down a harmful insect larva, *Sabulodes caberata*, population.

At the New York City port of entry, living larvae of the light brown apple moth were intercepted on a shipment of apples from New Zealand. This destructive moth of New Zealand, Australia and Tasmania does not occur on the continental United States.

On other fronts:

Grasshoppers are still causing much crop damage over scattered areas of the United States.

Fall armyworms have emerged in several new states—Maryland, Missouri, Oklahoma, Iowa, Texas and Arizona.

Second and third broods of codling moths have emerged or are expected to emerge, in time to harm orchards about the nation.

Crickets are attacking stored foods in the northern area of Mississippi, while in Oklahoma they are causing much damage to clothes.

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PSYCHOLOGY

Hoarding Due to Need For Activity, Security

► MAYBE THE woman who saves paper bags does it to feel secure and the man who hoards every scrap of string feels the need to be active.

This possible explanation is suggested by findings at the Roscoe B. Jackson Memorial Laboratory, Bar Harbor, Me. The findings are from studies made with laboratory animals, such as rats. Other animals, especially those that hoard "naturally," should be studied, scientists at the Laboratory believe.

"Today, scientists feel that hoarding by animals is related to their need for activity, security, etc. Fifteen years ago it was thought this behavior was related to the animal's need to hoard materials necessary for survival," Dr. Sherman Ross, scientific associate at the laboratory and associate professor of psychology at the University of Maryland, stated.

Instinct, environmental stress, learning, fear and shyness all may play a part in causing an animal to hoard, it is thought. But the findings to date do not seem to fit together into any meaningful scheme. Many studies have been made but more are needed, Dr. Ross said, to explain fully why animals from rats to man hoard food and other material in excess of their needs.

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TECHNOLOGY

Cotton Fibers Improved By New Chemical Process

► THE TEXTILE industry has learned to treat cotton chemically to improve its fiber structure and to give new synthetic materials stiff competition.

Known as cyanoethylation, the process fortifies cotton fibers against attacks of mildew and bacteria, gives them greater strength after exposure to wet and dry heat, and makes them more receptive to all classes of dyes.

Further treatment can alter the fibers into products having even more desirable qualities, the Institute of Textile Technology, Charlottesville, Va., has discovered. The Institute is a cooperative research and educational center for the textile industry.

Known as the T-7 fiber family, the new cotton products in certain instances have been made considerably stronger by additional treatments. Yarns and fibers have been given extra "stretch" and greater resistance to scuffing than either the original cotton fiber or the T-7 fiber.

Familiar characteristics of cotton are unaffected by the new chemical process.

The basic chemical used in producing the new family was identified as acrylonitrile. This chemical is an important ingredient of many synthetic rubbers and acrylic textile fibers such as Orlon, Dynel, Acrilan and X-51.

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