

AERONAUTICS

Plane Problem Complex

Controversy over whether American planes are superior is due to fact that some important features must be sacrificed to have others; fast planes are not maneuverable.

➤ ARE AMERICAN pilots being sent into the air in combat areas in planes that are inferior to the Japanese Zeros or the German Focke-Wulfs?

The answer is a vital one to the American people, and it is therefore the subject of hot controversy between writers who do not know the whole truth and public officials who are not at liberty to speak it.

When the facts are, finally, freely discussed, it will probably be perfectly clear that everyone is right and, to quote Gilbert and Sullivan, "all is right as right can be."

Here are the facts:

American airplane manufacturers can build the fastest planes in the blue.

They can make them climb.

They can make them maneuverable.

They can arm them with the best guns.

They can protect the pilot with the best in bullet proof windshields and fuselage.

They can make them relatively fire resistant by self-sealing fuel tanks.

They can make them carry a heavy load of guns, fuel, and bombs.

They can make them cruise farther with a fighting load than can the planes of any enemy — from Shangri La to Tokio.

But they can't combine all these features in any one plane.

If you build a plane that can outfly any other plane in the air, you can't expect to make it land on the space of a boat's deck.

If a plane is built that is so strongly fortified that it cannot be successfully opposed by any enemy fighter plane, you cannot expect extreme speed from it.

If a plane is built that will outdistance all pursuers, you can't expect that plane to "turn on a dime" and dart in and out of a dogfight like a mosquito.

And, all too often, a super-duper plane which combines an astounding number of these ideal features cannot be produced in large numbers in blitz time—it must be mulled over carefully by hand-workers.

Which of these features do we want

in our planes? That is a question that is not yet completely answered. The chances are it never will be, because warfare in the air is constantly changing. And the enemy doesn't build his tactics to allow us the advantage of our strong points—he aims constantly at our weak points.

If we have an air armada of heavy, strongly fortified planes of the "invincible" type, the enemy will try to make all air battles a hit-and-run, dodge-and-harry type. If all we could supply to our pilots at the front were light, vulnerable planes without heavy armament but able to out-maneuver any opponent in a breath-taking display of sharp turns and loops and rolls, dog-fighting in aerial warfare would immediately become as obsolete as the dodo.

The argument as to the relative importance of speed, maneuverability, strength of armament, pilot protection, goes on and on and will continue. It is

complicated by the fact that the pilot, too, has limits of what he can stand in maneuverability without "blacking out." The facts about the physiology of pilots, like those on the engineering performance of planes, is not being told lest it aid the enemy. Enemy pilots are subject to the same human failings when exposed to high altitudes, extreme cold, fast turns and abrupt dives. They would like to know what we know.

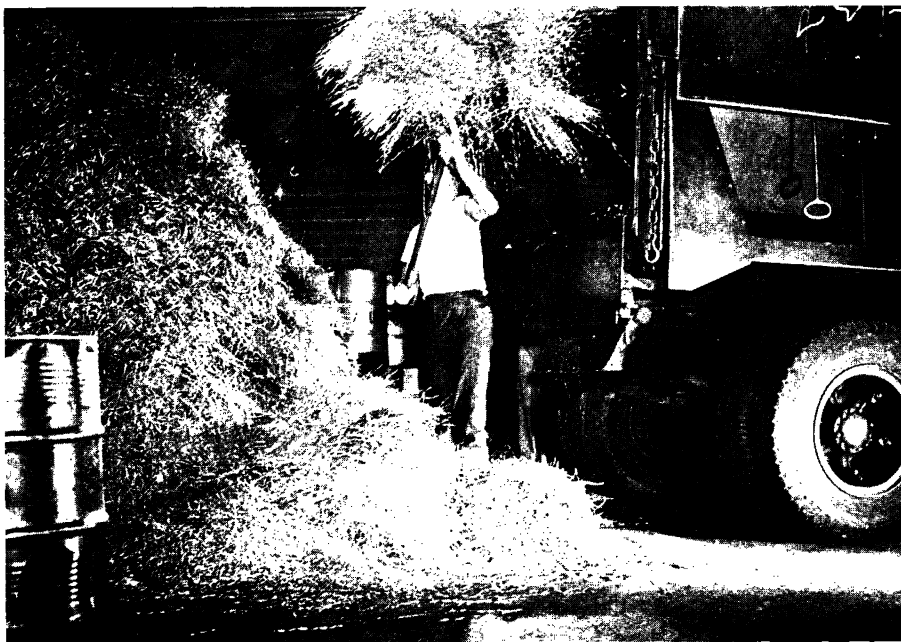
Some pilots lean to the opinion that the immediate practical answer to the question is this: We need planes—period. We need fast planes. We need maneuverable planes. We need quick-climbing planes. We need heavily armed planes. We need long-cruising planes. We need all sorts of planes. But, above all, we need planes—in quantity and immediately.

Science News Letter, October 17, 1942

ARCHAEOLOGY

New Find Helps Date Prehistoric American

➤ A NEW discovery, which may lead to more complete knowledge of our prehistoric North American ancestors and help bridge the 10,000-year gap in archaeological knowledge, has been made by Dr. Frank H. H. Roberts, Jr., Smithsonian Institution archaeologist.



PITCHING INTO THE SCRAP—These are steel shavings thrown off in making propellers for U. S. warplanes at the Curtiss-Wright Corporation's propeller plants in New Jersey. The shavings are being pitched onto a truck for shipment to a plant for re-claiming—and that isn't hay.

A bison wallow, two or three thousand years old, was excavated in eastern Wyoming by Dr. Roberts. It revealed a number of spear points known as "Yuma points," formerly thought to date back to the oldest known inhabitant of North America, the Folsom man who lived at the end of the last Ice Age, 10,000 to 20,000 years ago.

This new discovery, however, places the Yuma points at a much later date, somewhere between Folsom and modern. It may lead to more complete knowledge of the "Yuma man" who used those spear points and thus fill in the gap in archaeological data between the Ice Age and the dawn of history on the North American continent.

Science News Letter, October 17, 1942

MEDICINE

Anti-Blood Clot Chemical Successful in Sweden

➤ A COUMARIN compound from spoiled sweet clover, called AP, has been successfully used in patients suffering with thrombosis of the legs, it is reported by Dr. Jörgen Lehmann, of Sahlgrenska Sjukhuset Central-Laboratorium, Göteborg, Sweden (*Science*, Oct. 9).

As the clotting tendency of the blood was reduced, as shown by blood tests, there was improvement in the patient's condition as shown by a fall in temperature and lessening of swelling and congestion. Patients with milk leg were more resistant to the drug and required larger doses than those with other types of thrombosis of the legs. In all cases the course of the disease was shortened and no further blood clots developed.

AP should not be given to patients with kidney, heart and liver disease, Dr. Lehmann warns. Mild toxic symptoms, such as vomiting and diarrhea, occurred in a few cases after the first dose of the drug but seldom after subsequent doses. Liver and kidneys were not affected. Minor hemorrhages occurred in two of the 17 patients but were controlled by one of the vitamin K compounds. Two expectant mothers were successfully treated for thrombophlebitis. Nursing mothers excrete AP in their milk, tests of their babies' blood showed.

The drug can be given, Dr. Lehmann states, with the sulfa drugs, the barbiturates and morphine. It can be given to patients with tuberculosis and pneumonia.

Science News Letter, October 17, 1942

MEDICINE

Protein Study Made

➤ IF YOU are hungry for a steak, be glad you don't have to read an editorial, appearing in the *Journal of the American Medical Association* (Oct. 10) which includes such mouth-watering details as sitting down three times a day to eat twelve and one-half pounds of meat.

Dogs ate the meat—in pre-meatless days—during studies on protein deficiency. The studies were made by Dr. L. A. Sachar, Dr. Abraham Horvitz and Dr. Robert Elman, of Washington University School of Medicine and Barnes Hospital, St. Louis, and reported in the *Journal of Experimental Medicine*.

Protein deficiency in the body resulting from protein-poor diets, can be detected and measured simply by determining the amount of albumen in the blood serum, the St. Louis scientists discovered. Their findings and those of other scientists on dogs indicate that there is a constant relationship in the loss or gain between blood plasma or serum albumen and total body protein induced by diet.

From this they developed a formula, believed applicable to man as well as

the dog, which will show the doctor how much protein must be given to a patient in order to replenish the depleted body protein. In one of the studies dogs that had been on protein-deficient diets were given meat *a libitum* to see how fast they could overcome the depletion. Each dog ate daily for two weeks about one-fourth of its body weight in meat, which would be equivalent to twelve and one-half pounds of beefsteak three times a day for the average grown person.

For patients who are severely depleted and must be fed through their veins, the St. Louis scientists believe that human serum or plasma transfusion is unpractical. They suggest instead the use of hydrolyzed proteins of "high biologic value."

The studies and findings should not be taken to mean that plasma or serum transfusions are without value in other conditions. The protein deficiency studied, moreover, is a severe one resulting from a much more limited diet than one with a two pounds per person per week meat allowance.

Science News Letter, October 17, 1942

MEDICINE

Winged Shoulder Blade

➤ DISCOVERY of what is apparently the first case on record of winged shoulder blade resulting from carrying a knapsack is reported by Captain F. W. Ilfeld, M. C., U. S. Army, and Major Hall G. Holder, M. C., U. S. Army (*Journal, American Medical Association*, Oct 10).

The patient, a private, was admitted to the Station Hospital at Camp Callan, Calif., complaining of difficulty in raising his right arm and a prominent right shoulder blade which seemed to "strike the back of the chair" when he sat down.

He thought the condition was due to having "strained" his right shoulder while putting the pack on his back. The doctors found a weakness of the muscle that rotates the shoulder blade and with no other cause that could be found for it, ascribed the condition to "stretching of the long thoracic (chest) nerve in swinging the pack on the back or to

pressure on the long thoracic nerve from the strap of the knapsack against the chest and shoulder."

The patient's arm was supported in a sling and he was given infra-red heat treatment and massage to the shoulder. Slight improvement in muscle power followed within a week and about four weeks later his shoulder blade and its muscle were back to normal.

"In view of the expansion of our armed forces during the present emergency," the Army surgeons declare, "the occurrence of this deformity from such cause, its recognition and treatment are important."

The winged shoulder blade deformity has been reported as long ago as 1825 but the causes of earlier cases have ranged from infantile paralysis and other diseases to injuries from being kicked by a horse, using crutches, and the like.

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