



**AIDED BY SHORT CIRCUIT**—The guns in this aircraft turret can be maneuvered more easily with a new device called the amplidyne. The whited out area is not the amplidyne; it hides the turret mechanism which must remain a military secret.

## NUTRITION

## Protein from Corn Germ

A new process makes this important part of corn, now fed only to livestock, good for human food which may help ease the meat shortage.

➤ WITH MEAT shortages making everyone increasingly protein-conscious, news that a half-billion pounds of good protein a year may be made available for human consumption comes from the chemical laboratories of the University of Illinois. It is corn protein, in the germ or unsprouted plant tucked in the corn grain, which is at present used principally as animal feed because of the tendency of corn germ to turn rancid quickly.

A new kind of "de-fatted" corn germ, with this oil extracted and saved, has been put through a series of tests on laboratory animals by Dr. H. H. Mitchell at the University, who has now made a preliminary report to the National Research Council in Washington, D. C. In it he states that "except for the cashew nut, defatted corn germ is the only plant food we have studied, the protein of which possesses as high a biological value as lean meat."

To solve the problem of corn germ spoilage, a commercial firm in Monticello, Ill., the VioBin Corporation, has devised a method of extracting the oil at "pre-cooking" temperatures. The fat content is reduced to 2%, moisture to 8%, so that the keeping qualities of the defatted germ have been greatly improved. When the corn germ was found to be palatable to human beings, the University of Illinois began checking the nutritional values of this new food, hopeful of increasing the value of the corn crop.

Dr. Mitchell's feeding experiments showed that de-fatted corn germ contains 21% protein, which is 85% as digestible as beef protein and with a biological value quite as high. It is also rich in several vitamins and has a high mineral content. Its iron content assays at the exceptional figure of 300 parts per million.

Even before full publication of Dr.

Mitchell's findings, plans are being made to step up commercial production of corn germ, to help meet the shortage of protein foods. The first large-scale production, two million pounds a year, may be required mainly for export, perhaps as an ingredient in dried soups. This pre-cooked food may be used also as a filler and protein supplement for meat products, and as an ingredient in various cereal products.

Increased production depends upon priorities for processing machinery, which is neither complex nor expensive. There is plenty of the raw material—germ from dry degerminated corn, since about 10% of the average corn is germ, of which about one-half can readily be saved.

Huge amounts of corn germ, discarded in making breakfast cereals, hominy and corn meal, can be defatted; it can also be had from plants making alcohol from corn, for the germ is a handicap in alcohol production.

According to present estimates, perhaps 750 million pounds of corn germ per year are potentially available for use. This would produce about 500 million pounds of defatted corn germ, in addition to 200 million pounds of corn oil, which would double the American output of this oil.

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## ENGINEERING

## High Frequency Current Used to Explode Rivets

➤ QUICKER and at the same time more secure riveting in airplane construction is achieved by making the rivets explode themselves, in a method patented by L. A. Burrows and M. A. Cork of Woodbury, N. J., and R. M. Girdler of Sewell, N. J. The now familiar explosive rivets carry a small charge of explosive in their hollow ends, which is set off by touching an electrically heated iron to their heads. This, however, causes some expansion in their heads and shanks, interfering to that extent with an exact fit. The three inventors obviate this by utilizing a high frequency current to produce induction heating, and by loading the rivets with an explosive having a lower ignition point.

Rights in their patent, No. 2,327,763, are assigned to E. I. du Pont de Nemours and Company.

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