AGRICULTURE

Use Farm By-Products

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➤ ON THE farms of America there are materials which, if they could be utilized, would be worth much as industrial raw material. They would add to the farmer's income.

These are farm wastes. Perhaps it would be better to call them "residues" or "by-products." There are substantial tonnages on our fields that cannot now be used, either because we do not know enough to do so or because it is too expensive to attempt to gather and process these low-grade materials.

This problem of wastes or residues is quite distinct from the surpluses of conventional agricultural products, such as wheat, cotton, milk, etc., which have been purchased by the Government and stored in order to support farm prices.

Use of these farm wastes has long been a dream of the chemist who has looked to agriculture for his new, and perhaps cheaper, raw materials.

An astounding number of products can be made from plants that grow in the soil. The difficulty is not in using them chemically or industrially, but doing it at a profit in competition with other sources of the raw materials.

Motor fuel can be made from corn. Paper and wallboard can be made from corn stalks.

In the case of corn converted into alcohol and used in automobile engines, this grain is in competition with the oil wells of the world. The price of corn stands in the way unless the price is disastrously low to the farmer.

In the case of paper making, corn stalks must compete with forests in which the cellulose is included in large, easily-handled logs that are in concentrated and plentiful supply, despite the large demands upon our forests.

An active group of scientists and technologists have considered the industrial utilization of farm products for about two decades. At the recent meeting of the National Farm Chemurgic Council's Conference at Memphis, Tenn., Drs. K. Starr Chester and Warren C. Ellis Jr. of Battelle Memorial Institute, Columbus, Ohio, observed that biological residues, waste materials from the farm, are widely scattered and the job is to find some economical means of assembling them at a central point where they can be "processed."

Shipping bulky materials to the factory where they will be used is one heavy expense. The Battelle Institute scientists suggest that the farm waste be put through one or two processing stages locally to decrease its bulk and increase its value to the point that it would be economical to ship it. Equipment already in existence might be used. For instance, cotton gins and canneries could be used during their off-seasons.

Railroads could cooperate by making available portable, semi-processing units that could be shifted from place to place on railway cars.

Important utilizations of agricultural residues that have proved practical have, in most cases, relied upon the material being brought to some one place as a consequence of a major operation. For instance, the bagasse material remaining after the sugar has been squeezed out of sugar cane is conveniently at the sugar mill. Oat hulls used in large quantities for making the basic chemical, furfural, are assembled at a central point in connection with oatmeal cereal manufacture.

All of the residues or wastes are not located on the farm. The scientists suggest that garbage and sewage can be utilized economically if we use our ingenuity. Such materials could be rapidly converted into the high-quality humus that the soils of many of our farms need in increasing amounts.

Lignin is another waste material of enormous tonnage which is now largely wasted. This is a major ingredient of wood and a by-product of paper manufacture. Success has not yet come to research attempting to decompose it chemically or by bacterial action, but some day lignin may well be a very valuable raw material.

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AERONAUTICS

Navy Trains Men to Use Supersonic "Sparrow I"

➤ THE NAVY is training its men to use the supersonic "Sparrow I," a deadly air-to-air guided missile that can be launched from the F3D Skynight fighter to seek out and kill enemy planes.

Bristling with swept-back fins, the sleek, needle-nosed missile is slated for operational use with carrier-based jet planes of both Atlantic and Pacific fleets.

Volume production of the Sparrow I has begun at the Sperry Gyroscope Company's new plant at Bristol, Tenn. The supersonic Sparrow represents the end product of 100 prototype designs and tests.

The rocket-powered missile can be controlled accurately when fired from a speeding jet plane. It is fully maneuverable at supersonic speeds, Sperry reports. The Skynight can carry at least four of the missiles under its wings.

The Sparrow I is one of a family of guided missiles bearing the same name. The Sparrow II and Sparrow III are both in production, according to a Defense Department list of 550 weapons and other items. They are also air-to-air missiles.

Between 1948 and 1951, more than 100 prototypes were critically test-flown before the Navy settled on the production models.

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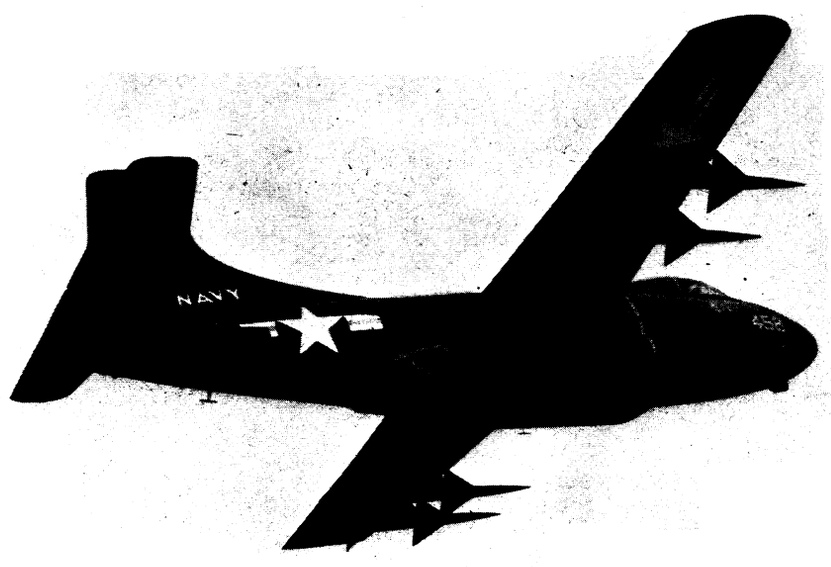

AIR-TO-AIR MISSILES—This is the first photograph of the Sperry Sparrows, air-to-air guided missiles that hurtle toward their targets at supersonic speeds. They are poised on wing racks of the Navy's twin-jet night fighter, the Douglas F3D Skynight.