

Airplanes—Continued

young British aeronautical engineer, Capt. G. T. R. Hill, was fortunate enough to win a scholarship that gave him the opportunity of studying airplanes and how they are built. In a quiet retreat in rural England he spent months of figuring, drawing and thinking. Then at a remote spot on the South Downs he built a glider that embodied his ideas. Unconventional, tailless, with spread wings, it came to look like the extinct lizards he had read about in his geology books. Affectionately he named his creation "Pterodactyl," after those ancient flying lizards.

The pterodactyl glider, after demonstrating the soundness of Captain Hill's design, metamorphosed into an engined tailless airplane that attracted wide aeronautical interest. It flies without stalling. It is lighter in construction than the ordinary plane. "Controllers" on the wing-tips perform the functions of elevators and ailerons. It is a new breed of aircraft. Perhaps further trials will show it worthy of starting a new aeronautical fashion, or it may not survive in the fierce competition for better airplanes.

Bidding for a place in the air is another queer-looking craft, a sort of flying vertical windmill. This is the autogiro, the invention of Senor Juan de la Cierva, a Spanish engineer. Some have called it a helicopter, but it is not. It is essentially an airplane with revolving wings and it flies like an ordinary airplane, not straight up as a helicopter is supposed to. The first of the autogiros were built in 1919, and since then over thirty machines have been constructed and flown. Flights of considerable length have been completed, and many engineers predict that this type of machine, embodying new principles, has a real future before it. Others feel that the standard design of airplanes, improved by further research, will match the autogiros' performance.

Replacing the ordinary wing structure, there is a four-bladed gigantic windmill-like revolving wing. This is free to revolve and is not powered in any way. It is whirled very slowly during flight by the relative wind. In other respects, the craft is built much like an ordinary airplane. The revolving wings give it the advantage of being free from sudden or violent stall and a slower safe landing speed. Although the autogiro cannot be built to attain as great speed as the (*Turn the page*)

California Fights to Save Fig Crop

Botany

Warfare against a plant disease that threatens California's huge fig industry is being waged on a most unique scheme of campaign. It all centers around keeping a certain small insect, a little wasp no bigger than a gnat, aseptically clean. If the fig-wasp can be kept clean the figs will be saved.

This tiny wasp, called *Blastophaga* by scientists, looms so large in the fig business because she is the only creature that can pollinate the Smyrna fig, which is the most valuable variety in California. The Smyrna fig, being exclusively female, produces no pollen itself, and the wasp is depended on to transfer pollen to it from an exclusively male fig variety, known as the "caprifig," which produces inedible fruits but plenty of good pollen.

The *Blastophaga* wasps breed only in the fruits of the caprifig, and emerge from them as adult insects covered with pollen. Fig growers fasten caprifig branches in their Smyrna trees, and the wasps, attempting to enter the immature Smyrna figs, accomplish their fertilization. The resulting seeds in the Smyrna figs give them their special value and the medical properties which are claimed for them.

Thus for many years the little fig-wasp has been a vital factor in the prosperity of California fig growers. Now she threatens to be the agent of their ruin, because a serious outbreak of a brown-rot disease has occurred among the figs, and the fig-wasp has

been shown to be the unwitting carrier of its germs. Every fig she pollinates she also infects with the virus of destruction, for the pollen-providing caprifigs are infected, and the wasp carries off the infection when it carries off the pollen.

To break this vicious circle a drastic and elaborate clean-up campaign has been necessary. Instead of letting the fig-wasp breed and over-winter in its natural way, the stock of insects that are to fertilize this year's crop has been concentrated in a newly built "insectary" near Fresno, and fig-growers have been required to ship every single caprifig fruit here. Millions of insects, in tons of caprifigs, have been assembled.

The wasps are brought out of their over-wintering condition in special incubators, and are allowed access to the caprifig pollen only after the fruits containing it have been carefully sterilized to kill the brown-rot germs. Then the wasps are induced to enter special mailing tubes which are sent to the fig growers. Released in the orchards, the little pollen-carrying insects proceed to the Smyrna fig flowers and complete their fertilization.

State officers inspect all orchards to see that no caprifig fruits, containing possible infection, are left on the trees. If the clean-up campaign can be made 100 per cent. complete for a few years it is believed that the disease will be completely stamped out.

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Bad Spelling Reveals Language

Archæology

Bad spelling on tombstones in the Jewish catacombs of Rome indicates how the Jews who lived in Rome in the early Christian centuries pronounced Greek and Latin, according to Dr. Harry J. Leon, of the University of Texas.

Scholars have wondered whether the Jews who formed a settlement in Rome clung to their Hebrew ways or whether they did as the Romans did, Dr. Leon explains. Six Roman catacombs where the Jewish residents buried their dead are now known, and study of the inscriptions on the slabs and the gallery walls show that the writing is three-fourths Greek and one-fourth Latin. Often words in the inscriptions are confused with other words of similar sound, so that they are misspelled in characteristic ways.

Jewish ritualistic symbols on the tombstones are significant evidence that the epitaphs on the underground tombs were indeed written by Jewish people, using foreign languages, Dr. Leon points out.

The Jewish population in Rome, which grew to about 40,000, was no more familiar with the Hebrew language than the average Jew of today. The more cultured among them spoke Latin as well as the popular Greek, the recent investigations indicate. Their inscriptions afford valuable material in tracing the history of the Greek and Latin languages in their development from the classical tongues of antiquity to the modern Greek and the Romance Languages of our day, Dr. Leon states.

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