A NEW TAKE-OFF for the AUTOGIRO

By DON MARQUIS, '39

LAST winter at a meeting of the Royal Aeronautical Society of London the usual atmosphere of placid interest was replaced by hushed attention. The inventor of the autogiro had brought his brain child out of the closet where it had long been concealed, and announced that it would soon be ready to meet all comers. To those present the autogiro had been a closed issue. Five years ago it had burst overnight into fame, but not into fortune, for it had failed to deliver the goods and was promptly shelved. "Just another freak." But now the foremost aeronautical minds of Great Britain and Europe were shocked into tense attention. They were being told that the autogiro had left the apron strings of the airplane and was emerging into a maturity with a promise of great things to come. "—and while we make no claim to superiority in every respect, we are convinced that we will not be far behind the airplane in what might be called airplane performance." The inventor of the autogiro stated quietly, and Juan De La Cierva, of a mildness to belie his brilliance, took his seat amid a buzz of comment.

"Airplane performance" had been the chief bugaboo of the autogiro. "Half the speed and half the load for twice the power" had been the jibe of airplane pilots. No one disputed that its abilities extended over a wider range than those of the airplane, but it could not compete with the latter in its own field. Another reason for its brief popularity was the difficulty of control. Although there were only 80 autogiros built in this country during the two years following its introduction here in 1931, 108 accidents occurred in the same period. True, they were, for the most part, of a trivial nature, and lacked fatalities entirely, but the autogiro showed an annoying lack of control at low speeds, and spot landings often ended in a tumble, with expensive repairs resulting.

So in 1933 the autogiro was taken from the market, and the efforts of its backers went into research. Now after two years of silence, the makers announce a new autogiro, purged of its backwardness, and possessing abilities hitherto undreamed of.

If you happened to attend the 1937 National Air Show in New York City, you probably saw the "Roadable Autogiro" exhibited there by the Department of Commerce, which is experimenting with this new vehicle. The commuter of tomorrow may drive his autogiro from his standard sized garage through the streets to a vacant lot, unfold the vanes, and fly at more than 100 miles a hour to, perhaps, the roof of his office building. Plans made by the Department of Commerce to fly its pet exhibit to the entrance of Holland Tunnel and to proceed into the city on wheels were thwarted because the ship had not been equipped with an auto license!

This novel double nature of the autogiro was conceived by the Kellet Brothers, one of the two American manufacturers who have stayed with the machine. In

the course of experimenting with pusher autogiros, they discovered that with the addition of a drive shaft, clutch, and other simple alterations, the airplane might be driven through the rear wheel. The propeller has returned to the ship's nose, but the motor stays behind the pilot, giving "roadability," and, which is especially important in this type of airplane because of its vertical descents, giving perfect visibility. The vanes, now the autogiro's sole lifting surface, can be folded onto the back of the ship; when they are folded it can be tsored in an ordinary garage, and on the road takes no more space than a car.

Most spectacular of the autogiro's new abilities is the direct take off. The most recent machines can jump directly into the air to a height of 20 feet, and climb upwards from that point in the normal steep climb. This ability was developed by Cierva[1] himself, and followed the clutching of the motor to the rotor to start it whirling before taking off. Cierva devised a means of flattening the pitch of the vanes so that they might be whirled very rapidly, storing up an excess of rotational kinetic energy. When they are allowed to bite into the air, the machine is pulled upwards, and is flying as soon as the rotor has slowed down.

Imagine the new possibilities opened to aircraft by this flying machine endowed with the talents of a helicopter. Soon every naval ship may have an autogiro, for it can literally land and take off from a handkerchief. The owner of an autogiro needs no expansive airport to make use of his machine. He may fly from his back yard. Rough water need no longer be a threat to the seaplane, for the autogiro will enter and leave it without any high speed contacts.

The old shortcomings of inefficiency and inability to carry a load are fast being overcome by theoretical and structural advances. Control has been perfected by shedding all airplane appurtenances except the rudder, and changing direction merely by tilting the rotor.

Just how does the autogiro stack up against the airplane? The latter can fly faster, and costs less. But the autogiro of today is flying 50 miles an hour faster than its predecessor, and the price will decrease as soon as quantity production is undertaken. Can the airplane maintain level flight at 16 miles an hour, hop into the air, or land vertically gently as a parachute? The autogiro cannot stall and does not have to maintain a minimum speed to fly as does the airplane. It is inherently much safer and is easier to learn to fly.

In comparing the autogiro with the airplane, it must be remembered that the former is still in its infancy. Not more than five or six men have contributed anything to the autogiro, while a great school of aeronautical engineers has grown up dedicated to the cause of the airplane. As soon as the rotating vane craft are more generally recognized for what they are worth, progress will be hastened by the efforts of those technicians who find it increasingly difficult to add anything of value to the fixed wing aircraft.

The autogiro, unique in its abilities, is expanding the horizon of the flying machine. In commercial work new services will be rendered, and a new field of private ownership will be opened so that the "family chariot" may yet be drawn by a Pegasus.

[1] The impetus behind Cierva's invention of a new flight principle was the fatal crash, during its test flight, of an airplane which he designed. His own recent death, which occurred ironically enough in the failure of a conventional airplane whose very type he strove to supercede, makes this picture of the autogiro as he left it the more timely.