

A NEW TECHNICAL PROFESSION

By Brian Sparks, '32

One hears so much ballyhoo about the "get-rich-quick romance" of aviation that one is liable to scoff at the industry as a whole, particularly the field of piloting. I myself was no exception to this fairly common failing. Aviation has been going through a great struggle to divorce itself from its swashbuckling, romantic past. Since flying has such a natural romantic angle to it, this has been no easy matter, and it has not been helped by the polished boots and breeches, self-designed uniform type of publicity hero that we have been afflicted with during the past few years. These anachronisms have lost greatly in public favor during the last two or three years; their complete disappearance is an earnest hope for the future.

The very recent developments in long range transoceanic flying boats, as well as the high altitude land transports, have required even greater developments in the standards of the pilots who must operate them. Merely flying one of these large aircraft has become a highly complicated and involved procedure which requires at least two men to actually manipulate the flight and engine controls, and this is but one phase of the duties. The engine room telegraph of the steamship has already made its appearance in a modified form on the latest flying boats, serving for communication of orders between the pilot's cockpit and the flight engineer's desk. A crew of seven is considered the minimum number satisfactory for the operation of four-motored seaplanes on flights of six hours or less, with eight or more required for the longer flights.

With the introduction of wing flaps, cowl flaps, automatic pilots, automatic mixture control carburetors, constant speed propellers, tabs and whatnot, landing, takeoff, and cruising procedures have become considerably more than simple manipulation of throttle and elevators. For example, consider the commands given during takeoff of one of Pan American Airways' Sikorsky Clippers: "Standard carburetor, full rich, gas on, (carburetor) heat, off, ten degrees flap, twenty-two fifty (rpm), stabilizer set;" immediately after leaving the water, "thirty inches (manifold pressure)," then shortly later, "zero flap, high power cruising, 1950."

Actual flying is but one part of the duties expected of an airline pilot. On long range flights he may be assigned as straight pilot, first or second officer or pilot navigator. In the capacity of first officer besides doing considerable of the flying, he must calculate the center of gravity location before each takeoff, the horsepower whenever a change of engine settings is made, hourly check gasoline consumption and determine by means of cruising charts the most efficient manifold pressure and rpm for the next period. As second officer his time is divided between flying, relief radio operator, flight engineer. The latter duty consists of a periodic check of the operating condition of the engines and auxiliary devices. When assigned as pilot-navigator, most of his time is taken up with celestial navigation, making out position reports, checking latest radioed meteorological reports.

Realization of the advancing requirements of pilots has prompted Pan American Airways to lead the way in preparing a program for the future. Only pilots with a college education (preferably technical) are considered when new

men are employed. In addition they must be a graduate of either the Navy or Army Flight School. This means at least two years experience in military flying, admittedly the most exacting flying experience available. When he begins airline work, it is taken for granted that such a man is an expert aviator. What is not taken for granted is that he has the very specialized knowledge believed necessary for modern airline flying.

He spends his first three months as a mechanic in the overhaul and service shops, is then required to get Airplane and Engine Mechanic's licenses. Following this he must get a regular seagoing radio operator's license, Radiotelegraph Second Class. On flight duty he often functions in dual or triple capacities of copilot, flight mechanic, radio operator. At the end of the second year he is expected to pass a series of examinations for Junior Pilot. These cover a variety of subjects in twelve separate examinations, including international air legislation, navigation, radio, meteorology, general science and mathematics, historical aspects of the Latin American countries, working knowledge of the Spanish or Portuguese language.

Upon transfer to a transoceanic division he must prepare for another series of examinations in advanced meteorology, celestial navigation, long range cruising control. But he is not through yet: after a minimum of three years as second pilot, he becomes eligible for "checkout" as first pilot. This involves another series of examinations, similar in scope to the Junior Pilot examinations, but considerably more advanced. After being checked out as Senior Pilot, he has one more step ahead of him. This is advancement to Master of Ocean Flying Boats, again entailing examinations, the most comprehensive of all. Interspersed throughout are various correspondence courses to be taken.

At present a considerable part of all this work is not absolutely necessary for successful transoceanic airline operations. The preparation is for the future, for it takes a long time to build up a force of technically trained pilots. As aircraft increase in size over present types, an executive-pilot will become necessary to direct the work of the crew, similar to a seagoing captain. Such an executive must be thoroughly conversant with engineering principles and practical theory of aircraft, engines, and accessories, as well as being an experienced pilot and navigator.

The tendency in the establishment of seniority for advancement is very definitely towards qualification and knowledge and away from the system based solely on length of service. This is proper, considering the increased amount of studying and individual work required, the greater responsibility involved. Modern engineering has at last entered even the "romantic aviator's" realm and made of it a new technical profession.

Editor's Note: Brian Sparks is well qualified to discuss this new profession as he has been serving as co-pilot on the Pan American Clipper ships flying to South America for over a year. Sparky, as he is known to his friends, is now flying Clipper ships on the Pacific run, and makes his home in Honolulu when on land.