Climbing away from San Francisco, the China-bound clipper sets a course for Honolulu, 2,400 miles away. The American flag is for inquisitive Jap warplanes.

"I FLY THE TRANS-

It's a fascinating job, this flying of the giant clipper ships. But soaring to Hawaii and China is bound to be. Captain McGlohn takes you to the Orient with him.

By CAPT. R. H. McGLOHN

with Howard Waldorf

MAYBE you have heard such a statement before but, honestly I have the most interesting job in the world. I am captain of one of the big 74-passenger Boeing clippers on Pan American's 9,000 mile run across the Pacific Ocean to China.

Come on aboard, if you have time, and fly with me to Hong Kong and I will try to show you what makes the job so interesting. Please excuse me if I seem to overdo the personal pronoun, but the "I" refers to the position rather than myself individually. My duties are typical of the other Pan American captains in the services which are carrying the American flag of commerce to the Orient, Europe and Central and South America.

Let's start our flight with the actual assignment. The orders are posted by the operations department.

"Flight 311 (that's the number of Pacific crossings we've made since the inauguration of service in November, 1935, but it doesn't include the many trail-blazing flights) San Francisco to Hong Kong via Honolulu, Midway, Wake, Guam, Manila and Macao. *Honolulu Clipper* (Boeing). Depart from Treasure Island 4 p. m. Wednesday. Captain R. H. McGlohn, commanding."

The orders then go on to list the other nine members of the crew. Sounds like a lot—10 of us—but she's a big ship, the biggest commercial aircraft in the world and there's plenty to do. Here's the way we line up for duty: I am captain, and master of the ship. I usually handle the flight controls on the take-offs and landings, stand a regular watch at them during the trip, make all final decisions concerning the flight and correlate the functions of the other crew members.

The first officer is the executive officer of the ship. He acts as second in command and relieves me of much of the responsibility of detail, such as supervising the loading and relaying my orders to other members of the crew. He is the only one who can share the "bridge watch" with me.

The second officer, also a pilot, acts as navigator, supplying the data as to heading, altitude and speed that keeps us on the selected air track. He also keeps the all-important ship's log.

The third officer is a junior pilot. He stands a regular watch as second pilot, relieving the first officer.

The first and second flight engineer officers are responsible for the proper functioning of the four engines, including the calculation of power and fuel required to fly under the plan set by the captain and detailed by the navigator.

The first and second radio officers maintain constant communication with the ground stations and furnish radio bearings to the navigator.

The first and second stewards are responsible for preparing and serving the food and caring for the needs of the passengers and others on board.

All of us are highly trained for our duties and most crews have been together on many Pacific crossings. In the air we stand a two hour watch and are off one hour out of every three.

The next step in preparing for our flight is taken Monday, two days before the departure, when the crew reports to the base for a physical examination. We get a very thorough going over. Even such a trifling thing as a common cold is sufficient reason for disqualification. However, all of us keep in top physical condition so the examination is little cause for worry. We take nine of them a year—two for the Civil Aeronautics Authority, the company annual and six pre-departures.

"One bell! My crew and I march down the platform into the ship and immediately go to our stations. Shortly afterward two bells sound and passengers come aboard."

PACIFIC CLIPPERS"

The physical examination is all for Monday, unless we have some radio, engineering or instrument flying problems to finish. No matter how many years of flying we have behind us, we keep on studying all the time.

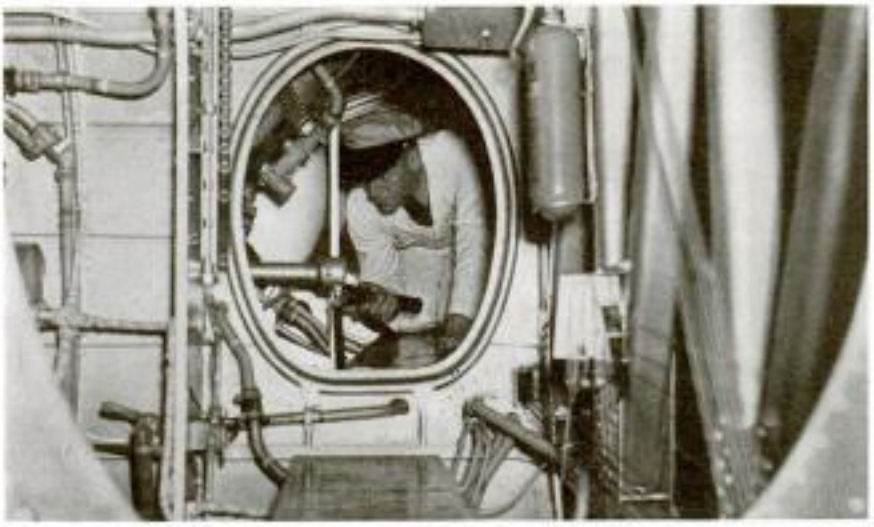
The next day we and the ship to be flown are put through a stiff predeparture test flight. Every man and piece of machinery is checked and double checked for performance. We check gas and oil consumption under the various power outputs and propeller settings, calibrate the instruments, the radio and everything on board. We do considerable instrument flying and make several instrument approaches to the landing area.

We finish up the test with fire and abandon-ship drills to make sure every man is familiar with his duties in an emergency. In the abandon-ship drill we land and as quickly as possible inflate and launch two big life rafts. Each man has a duty to perform. The navigator picks up the emergency navigation equipment that will be needed and the ship's log, the radio man the signal devices and battery charger, the stewards the food and water, etc. Sometimes we hold these drills in total darkness to insure that each man knows his job thoroughly.

We usually get back to the base early

"Once aboard, we slip into our seats at the controls (upper right). There is ample room for pilots, navigator, radio operators and flight engineers."

The author and his crew are feted at Honolulu. The stop at Hawaii is overnight. Next stop will be Midway Island. Then Wake, Guam, Manila and China.



The new Boeing clippers are so large the flight engineers can climb out into the wings and check or even repair engines in flight. Passageway is inside ship's wing.

in the afternoon. I turn the ship over to the maintenance department to be cleaned and fueled with the minimum quantity set up for the trip. The operations department figures this minimum on the number of hours predicted for the flight under the expected conditions, plus five hours fuel reserve. I check the amount. If there are any adjustments or repairs to be made to the ship, the orders are given at this time. That is all for the day.

The first leg of the flight to China is a long one—2,085 nautical miles to Honolulu (approximately 2,400 land miles), which means 16 hours or more of flying, so I have my own system of preparing myself. I try to stay up as long as I can the night before. I read until my eyes won't stay open any longer. Then I crawl into bed and in that way get a sound sleep that lasts until about 11 the next morning. I wake up refreshed and ready for the assignment.

I meet my crew at the base two hours before departure time. That gives us plenty of time for conferences on the weather and the loading of the ship. This loading is extremely important, as upon it hinges the performance of the ship. The center of gravity must be held within very close limits. I notify the first officer what center of gravity is desired and he loads the ship accordingly. Every person who goes aboard and every item—the mail and express cargoes, the food—all are carefully weighed and placed. Our permitted maximum gross weight is 82,500 pounds and we must not exceed it. Today we are taking 26 passengers, 3,000 pounds of express and 1,590 pounds of mail.

The meteorological department hands me a weather map compiled from last minute radio reports from ships at sea, our own stations, Alaska and the Aleutian Islands, Asia and the South Pacific. Every line of possible approach of a storm is covered. Also I get a chart of all the ocean vessels along the course, both as to where they are now and where they will be when we pass over, their call letters and the hours their radio operators are on watch. This

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Pan American now alternates China flights between Martin (left) and Boeing ships.

"I Fly the Transpacific Clippers"

(Continued from page 18)

map shows pretty fair weather all the way. The winds aloft look good—a quartering tail wind for the first 800 miles, and light headwinds from there to Honolulu. There is no disturbance to avoid so we will fly the direct air track, or No. 4. There are eight separate air tracks charted for the Honolulu crossing. We will fly at 7,000 feet altitude. The winds look most favorable at that level and it's a good one for passenger comfort and engine performance.

From the assembled data the meteorological department makes the flight forecast and I check it. Our forecast indicates we will arrive at Pearl Harbor, Honolulu, in 16 hours and 35 minutes. The tanks are loaded with 3,700 gallons of gasoline and 130 gallons of oil. That will give us the five hour reserve and still keep us under the 41¼ ton gross weight. The navigator figures the equi-time point at this time. This is the "point of last return", the last point at which we can turn back and reach our home base with the gasoline aboard. It isn't the same as the half way point, because the equi-time point is based on current wind conditions.

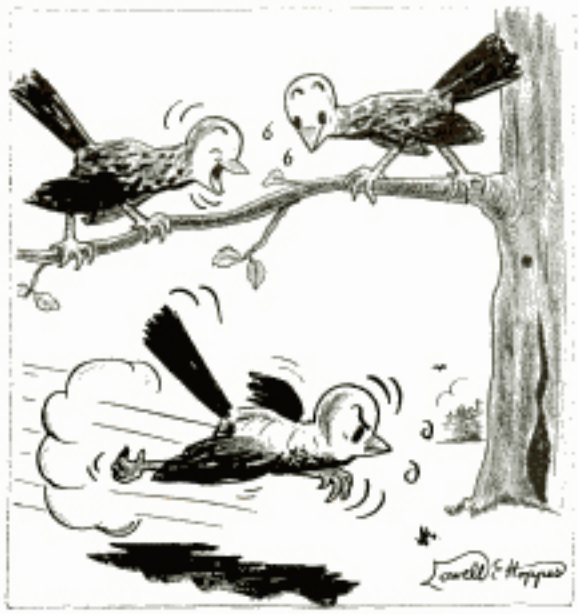
The last thing I do before boarding the plane is sign the official clearance papers and cargo manifests. These papers are just like those used for ocean liners.

One bell sounds! My crew and I march out into the sunlight and down the long walk leading to the dock. There she is, the giant *Honolulu Clipper,* riding easily at the dock—all ready for us, thanks to the many hours of work by maintenance, operations and the many little known departments behind the scenes of a transoceanic service, plus the long years of trailblazing and research and planning by the pioneers.

Two mechanics are on top of the 152-foot wing. They are making a final gas check. That's some of the mail and express on those big hand trucks going down the walk ahead of us. We march up the gangplank, go aboard through the main lounge amidships, march up the aisle past the luxurious passenger compartments and the galley and climb up the spiral staircase to the flight deck. This is the bridge of our clipper. It is larger than the average living room—21½ by 9½ feet, to be exact. That gives every member of the crew plenty of working room and makes for the maximum in efficiency. Notice the deep carpet and overstuffed chairs.

We go immediately to our posts for duty. I slip into the big adjustable chair behind the flight controls at the left side of the ship, the first pilot's post. I glance at the flight instruments on the board in front of me. Surely a far cry from the crowded boards of bygone days. At my right, the first officer is at his post behind the dual set of flight controls.

Directly behind me the pilot-navigator is spreading charts on his big work table and checking over octants and other instruments. Behind the first officer the radio officers are checking over the three sets of receivers and transmitters that will keep us in touch with the mainland every second of the long flight. Behind them the first engineer officer is giving a final look at the instrument board which will tell us what's going on inside of the engines, how much power they're producing, the temperature of the cylinder heads, how much gasoline has been consumed, how much remains, whether there is any water in the fuel tanks and a hundred and one other things about the mechanical equipment. During each half hour he will take 62 different readings. In front of him are the engine controls and synchronizer with which he synchronizes the engines at a given number of revolutions per minute. The second engineer is in one of the walkways in the wing inspecting the engines.



". . . Ever since he saw that airplane he thinks he has to taxi before leaving the ground . . ."

Behind the navigation station is my office, the master's office. It has two big overstuffed chairs. Here I hold conferences with the various members of the crew. Behind that is the bunk room for men off duty. There's another rest compartment in the anchor room below.

Two bells! That is the signal for the passengers to come aboard. They are quickly shown to their compartments. Already their baggage has been stowed away in the holds.

I start the engines, the port ones first, because the gangplank still is down. The engines have been warmed up by the ground crew so I keep them turning over just fast enough so they won't foul.

The ground crew hauls the gangplank ashore. The stewards close the hatch. The signal to cast off! The ground crew releases the mooring lines. I turn the big ship and follow the patrol boat out of the Port of Trade Winds to the selected runway. The clipper has a boat rudder under the hull and she handles well on the water. I follow a channel marked by floating automobile tire buoys.

The patrol boat turns and starts back. That is our point of take-off. I swing the ship around. I run up the engines and with the switches test each spark plug—there are 112 of them—to make sure each is firing perfectly.

The first officer checks the rest of the crew to make sure all are ready. From the lower deck the stewards report all watertight doors secured and all passengers in their proper seats. I flash on the "Fasten Safety Belts, Please" light in each compartment. The engineer says, "Ready!" The radio officer says, "Ready!" From the patrol boat comes the radiophone report: "Course all clear and ready!"

The first officer reports: "Crew and ship ready for take-off!"

I tell him how much flap to set and the propeller speed. At my nod he opens the master throttle full on. The big clipper comes to life. The four engines give out a mighty roar. She leaps through the water. I give her her head. I ease her up onto the step. She slides along on top of the waves. The green water breaks over her stubby seawings. She's getting light. I can feel her throbbing in my hands.

I ease back on the wheel. A last light bounce and she comes out of the water cleanly and gracefully. The engine roar hollows out. We are in the air, Honolulu bound. 35 seconds. Good going.

Treasure Island flashes below. Ahead is the Golden Gate. I signal the first officer to throttle the engines and reduce the propeller speed for the climb to cruising altitude. We take off at 42 inches of manifold pressure and 2,200 r.p.m. I give the pilot-navigator the exact time of take-off to enter in the ship's log. We level off at 7,000 feet and I give the order to check ship. We go through the same routine we went through on the water, checking each one of the 112 spark plugs and the various switches and instruments. Although the wing walkways make it possible for us to make extensive repairs to the engines in flight and we could continue our flight on three engines, if there is any sign of trouble at this point we must give the order to turn back. It is one of the rules responsible for the company's enviable safety record.

The big ship handles easily in the air.

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"I Fly the Clippers"

(Continued from page 60)

I can move the controls with two fingers and the rudder pedals require very little pressure. But we give the routine job of flying over to the gyropilot, Iron Mike or Filbert, as we have named him. We have to stand by and watch him and make corrections now and then, but he relieves us of the labor of constantly ho'ding onto the controls.

I order the throttles set for the predetermined cruising speed. The engineer synchronizes the engines. I switch on the gyropilot and with the adjusting wheels and tabs at my side trim ship and set her on the course laid out by the navigator.

It is now 4:29, or 00.29 Greenwich time which we use during the flight. We are over the ocean 50 miles west of Treasure Island. In another minute the first of the bearing checks will boom in from our D. F. (direction finder) station at San Francisco. We get these checks on our exact heading every half hour but if the necessity arises they can flash them to us as fast as three every two minutes. One ground station can work us all the way, but we switch over to Honolulu D. F. at the half way point.

The air speed shows 150 m.p.h. The manifold pressure is 29 inches and the r.p.m. 1,900. We have 1,500 horsepower available in each of the four engines but we are using only 950. They are turning over so quietly they seem to be loafing.

Radio reports a layer of high cumulus clouds drifting onto the track 500 miles out. Probably have to go up through them tonight. Have to keep on top so the navigator can shoot the stars and get the celestial fixes that check our position. He never goes more than two hours between fixes.

We are flying into the setting sun. In a few hours darkness will settle over the restless blue water below. I give the order to start duty watches. With two of us on duty at the flight controls at all times, we spell each other every hour. I look around at the rest of the crew. The sea routine is in full swing. The radio officer is tapping out messages of our progress. The navigator has dropped a smoke bomb and is checking our drift through sights on the wing. At night he uses phosphorus bombs.

The first engineer has disappeared in the port walkway. He's making his half-hourly inspection of the engines. At night we inspect the front ends of the engines with a rotatable light that streamlines into the top of the ship.

I ease out from behind the flight controls and the first officer takes over. The third officer slips into the vacant chair. Things are going smoothly. It is about time for dinner. I saw them loading on some tasty looking squabs. I wander downstairs to the lounge. The steward introduces me to each passenger. I believe that is an excellent way of promoting confidence in air travel. If the passengers meet and talk to the men handling the ship, they take a personal interest in flying.

We sit down to dinner in the lounge, 14 at a time. I eat with the passengers. The ship is very quiet and we talk back and forth in normal tones. The tables are set with gleaming linen and the clipper's own silverware. An eight-course dinner. To think, we used to fly the ocean on a ham sandwich. My, these squabs are good!

On the mainland I hear people say how monotonous it must be to fly the ocean. Nothing could be farther from the truth. Always there is something interesting to do and see. During the day we watch for surface ships. At night we look for their lights and at the millions of stars. Often we give the passengers informal courses in astronomy.

The cloud formations over the ocean are the most beautiful in the world. Great white puffy things, they drift lazily across the blue sky. On moonlight nights when we are above them it is like looking down on a field of snow. Also, during the day we occasionally sight schools of whales spouting all over the place. If they would only stay

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still we could use them to check our drift.

We lose the gulls and the rest of the birds a few miles from the mainland. They are a lazy lot. We are too fast for them, anyway. The passengers spend most of their time wandering about and gathering in little groups to swap stories. They play games, bridge mostly, or Chinese chess or race horse, that game with the dice. They read a lot, too. We have the latest magazines and best-seller novels in our ship's library. There is no music.

When we pass over an ocean vessel I exchange greetings by radio with the other captain. We use the radiophone. Often some of his passengers send greetings to some of mine. We also exchange the news and, important to the navigator, we exchange bearings. If it is in the daytime the vessel salutes us with its whistle and we can see the plume of steam. At night we blink lights at each other.

Passengers are such interesting people. Most of them have traveled a lot and they tell of faraway places. Usually we have one or two honeymoon couples aboard. Lots of first flighters, too, but I have yet to see a passenger who didn't appear to be completely at ease. I run into a lot of funny ones, too. The last trip out I heard my own voice on the radio. It was a talk I had given the day before at the fair. Either I had caught up with it or the radio waves had gotten lazy and were lolling around over the Pacific. Pretty soon, though, the announcer explained it was a re-broadcast.

A couple of trips ago a lady passenger stopped me and whispered she was afraid we were off our course. She had a Boy Scout compass in her hand. I asked her to open her handbag and the first thing that popped out was a photo light meter. I showed her how that was doing things to her compass so she turned the navigation job back to us. That was the same trip I gave a bride away.

After dinner in the lounge I go back to the controls. On the flight deck all is well. It is dark now and the navigator is in his turret observatory after getting his first star fix. He takes them frequently throughout the night, never more than two hours apart.

I relieve the first officer so he can go to dinner. I tell him about those mighty good squabs.

Ahead we sight the outer fringe of that cloud bank radio spoke about. I give the order to pull up on top. I take over the controls. At 10,000 we are on top in the clear and I level off. Again we check our bearings. The navigator takes another star fix. The radio officer holds down his key and the San Francisco D. F. booms in with a check. Now the radio officer swings his loop on the *S. S. Matsonia* which is nearby. That gives us a triple check.

Pretty soon the first of the lights on the lower deck go out. The stewards have made up the berths and the passengers are turning in. I go down to say good night. A youngster who is traveling with his mother has thought up another question. I encourage questions and am glad to answer them. Some are puzzlers, though. The youngster wants to know how a housefly lands on a ceiling—out of the top of a loop or with a half roll. That's got me.

The last of the passengers turn in and the lower deck goes dark. The big clipper slips on through the night. On the flight deck the routine is the same. Two hours on and one hour off. I spend my hour off checking ship and holding conferences with the navigator, the engineers and radio officers. Radio reports we will pass the *California Clipper* in an hour. She's our sister ship, bound for San Francisco from Honolulu. I asked the radio officer to contact the *California Clipper* direct. He gets her exact position and speed. I exchange messages with her captain on what altitude to pass. We decide I will hold 10,000 and he will climb to 11,000.

We talk back and forth and plot each other's progress. When we are about to pass all hands join in the game of "I Spy the Other Clipper." It's fun. There she is! See those lights blinking? They're saying hello. We blink back. By radiophone I learn from Captain Bill Cluthe (he's in command of the *California Clipper* this trip) what kind of weather he has come through. I tell him what's ahead for him.

Quickly the lights fade and are lost in the stars. Tomorrow morning, about an hour after we land at Honolulu, they will arrive at Treasure Island.

The equi-time point! We are almost to it. I summon the first engineer to my office. He reports how much fuel has been consumed and how much remains. He shows me a plotted chart of the gas consumed and miles flown. We call it the "howgoesit" curve. The gas consumed curve is below the mileage curve. That's fine. If it was above that would mean we are exceeding our gasoline budget. We check the ignition switches again and make another careful inspection of the engines. All okay. I call the navigator. Then the radio officer. They report everything okay.

I give the order to proceed to Honolulu.

Now the first faint tinge of daylight is creeping into the tropical sky. The navigator is taking his last star fix. From here on the radio plays an important part in keeping us on our course. The Honolulu D. F. (they're guarding us now) booms in with a bearing check as the radio officer prepares to swing his loop on the steamer *S. S. Lurline*.

Land ho! I have made the flight many times but always it seems it is over before it starts. We make a landfall over the green mountains of Molokai, one of the Hawaiian group. Sometimes we make a landfall on the lights of the city of Honolulu. Now we home on a signal from our Honolulu station. From the patrol boat in the landing area comes our landing orders, what runway to use, the wind direction and velocity, etc. Honolulu har-

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bor is as busy as it is beautiful. We let down over the water off the city. I take my place at the first pilot's post. I am in full control of the ship all of the way in. As we start our approach I make a final check of the engines with the ignition switches. The first officer is at my side in the second pilot's seat. He calls the roll by telephone. The stewards report hatches secure and passengers in their proper seats. The trailing antenna is reeled in. Crew and ship all ready for landing!

The air is smooth as silk. It is a beautiful tropical day and Honolulu is in all its glory. The patrol boat radios the course is clear and ready. I give the order for the flaps. The big ship slows her glide as they appear at the trailing edge of the wing. A few feet off the water I level off and let her clip over the surface for a few seconds. Then, easily, I let her cut into the water. I keep the engines turning over at a fair speed and we taxi to the dock. I give the navigator the time of landing and he enters it in the ship's log.

We are 16 hours and 34 minutes out of San Francisco. One minute under our forecast.

I am the first down the gangplank. Then the passengers and after them the rest of the crew. We turn the ship over to the ground crew to prepare her for tomorrow's flight to Midway, the second stepping stone on the way to Hong Kong. I hurry to town. I have just time enough for a couple of sets of tennis before breakfast.

And so it goes, across the Pacific. The next day we fly over beautiful and spectacular reefs that stretch almost to Midway, our overnight stop. Waiting there are the famed gooneys, those curious birds that came out of nowhere to claim Midway as their home. They line up like curious natives to look us over and see who we brought this trip.

Early the next morning we hop off for Wake Island. As we cross the international date line we hold a ceremony somewhat similar to the one they hold on boats crossing the equator. I officiate at this ceremony.

Overnight at Wake, a moonlight cruise in the glass-bottomed boat around the marine gardens, then on to Guam, Manila, Macao and, on the sixth day out of San Francisco, we land at Hong Kong. First to greet us is famed Sampan Annie, who sculls alongside to take personal charge of the docking of our big clipper. She never says much but she works plenty. She fairly makes the water foam as she darts here and there.

Overnight at Hong Kong, then back to Manila. Thirty-six hours there and we hop off at 3 a. m. for Guam so we will land in daylight. These night take-offs are interesting. A workboat goes out first and lines the runway with light buoys. The patrol boat sweeps the course with searchlights to make sure it is all clear. We follow the patrol boat to the head of the runway. They flash a green light: All clear and ready!

We blink our navigation lights: All clear and ready.

As the first officer opens the throttles a cannon on the patrol boat fires flare shells into the sky. They explode at 2,000 feet and make the runway as light as day while descending on their parachutes.

From Guam to Wake, Wake to Midway, Midway to Honolulu, then the long overnight flight to Treasure Island. It was just two weeks ago we took off from here for Hong Kong. I turn the ship over to the ground crew, sign the logbooks and other papers and rush home to greet the family.

Incidentally, my daughter Patsy—she's seven now—flew 25,000 miles before she was two years old. She wants to go to China with me next trip.

For two of the next five weeks I am on my own. During the other three I work out flying and navigation problems on the training ship, test hop the clippers in port and otherwise keep my hand in.

Then the physical examination, the three-hour test flight and off again to the Orient. I make the round trip every seven weeks. In addition to the two weeks off every trip I get a month's vacation every year with pay.

How did I get my job? I went the long way around. I left my home in the foothills of the Ozark mountains during the World War and enlisted in the Naval aviation service. I have put in 20 years of flying and I've been lots of places and have flown almost every kind of sea and landplane. I did some trailblazing in South America, pioneered the Carribean with the Navy, barnstormed the West with an old Jenny when I was on furlough and flew tri-motors in Cuba. My logbook shows over 10,000 hours. Most of the master pilots have about the same.

The minimum requirements for Pan American captains are 500 hours on four-engine boats, 2,500 hours of logged time altogether, 450 hours as pilot-navigator and about four years of apprenticeship on the coastal and ocean runs. Most captains have an Army or Navy background. They work their way up to pilots on the coastal runs, then transfer to third officer on an ocean run. They check out in engineering and navigation and take examinations for first officer which puts them in line for the captaincy. The training is very thorough. The pay runs from $200 a month for junior pilots to $833 a month for captains. Also, all of our expenses are paid when we are on the run.

I would advise any youngsters who want to fly the big clippers to get a thorough college education and to specialize in aeronautical engineering. They should go in for athletics, too, to keep in top physical condition. Tennis and golf are good sports. They help the eyesight.

What about the future? I am 36 years old now. I figure I have about 15 or 20 years of clipper flying ahead of me. I wonder what will be the size of the clippers then? When my flying days are over I will probably go to a ground job or retire. I hate to look ahead that far, though, because right now I have the most interesting job in the world.

END

Airport Report

THERE were 2,326 airports and landing fields in the United States on July 1, 1939, according to the Civil Aeronautics Authority. Of these, 730 were fully or partially lighted for night use. The total included 760 municipal and 454 commercial airports, 262 Civil Aeronautics Authority intermediate landing fields, 596 auxiliary fields, 27 Naval air stations, 57 Army airdromes and 170 miscellaneous Government, private and state airports and landing fields.