

Death Rides the International Airlines

Public Health

By JANE STAFFORD

Dangerous stowaways may ride on the great aircraft that link continents together. Invisible creatures that would add not an ounce to an airship's weight can hide where the cleverest officer could not find them. But they could bring disaster and death to sweep across a country. Disease germs lurking in the bodies of passengers or crew are the deadliest stowaways these great air liners can carry.

The danger from these stowaways is not limited to passengers and crews on airship or airplane. It may be shared by a whole nation. Germs of diseases that destroy animals, plants and men may be brought by air, as well as by land or water. We have learned to guard against these germs when they come by land or sea, but air travel brings fresh problems of disease prevention. With the plague-ridden Orient and the yellow fever centers of South America only a few hours or days away, public health officers must find new ways to protect our country from the ills that scourged the world a century ago. Now held in check, they await a chance to gain the upper hand again.

The new England-to-India air route and the probable dirigible lines from the Orient to America have tremendous possibilities in the way of disease spreading. The running time from London to India has been cut from 21 to 6 days and the Graf Zeppelin made the distance from China to Los Angeles in 2½ days. Medical and health authorities have not forgotten that the plagues that swept over Europe in the Middle Ages and later centuries had their origin in the East, although the traveling time was far greater than 21 days. Will the same plagues return again? Or will science find a way to free this newest kind of transportation from the horrible fate of furnishing free rides for deadly germs?

Aerial boarding stations for quarantine officers are already foreseen by one air-minded public health officer. Instead of boarding incoming liners from a tug, the quarantine officer of the future might fly out and board the plane or dirigible in mid-air, via a rope ladder. Should he find evidence of a quarantinable disease aboard, arrangements might be made for keeping the airship in quarantine at 500 to 1,000 feet above the earth, or sending it to a special quarantine detention field.

Whether or not they need to become aerial stunt performers, the quarantine officers of the future will have to be real Sherlock Holmes' of health, able to detect partly-developed disease germs hiding in the bodies of well men. The greatest danger of disease entering this country by air lies in the fact that people infected with the germs of cholera, plague, and other major quarantinable diseases do not show any signs of illness until after the germs have been in their bodies for a number of days. But during this period, before the presence of the disease is even suspected, the infected persons are constantly giving off germs in their secretions, breath or body wastes. One such person mingling freely with the population can start a widespread epidemic. The speed of air travel helps the disease germs mightily. They can now cover great distances and get a chance to spread to large numbers of people before they are detected.

Two and a half days from China to Los Angeles by air will probably be the new schedule. It takes from three to five days for the germ of cholera, for instance, to develop in the human body. This means a man may board a plane in China or Japan perfectly well, but harboring the germ of cholera in his body without knowing it. Two and a half days later he steps out at the Los Angeles airport, still without showing any signs of illness, probably without feeling ill. Within the next twenty-four hours he visits hotels, restaurants, shops, private homes; he rides in trolley, bus or train. The day after his arrival, or maybe two or three days after, he develops a virulent case of Asiatic cholera. And from three to five days later the thousands of persons with whom he came in contact after his arrival are suffering from more or less severe attacks of the same horrible illness. The entire community, perhaps the entire country would then be in the grip of an epidemic of this dread disease.

Had this same man traveled by boat, taking from 17 to 21 days for the voyage, he would have developed the disease before the ship reached port. He could have been isolated from the other passengers and the entire ship could have been quarantined until such time as it was safe for the passengers and crew to mingle with the general population without danger of spreading cholera among them.

How to prevent air travel from becoming a new and potent spreader of disease is a problem that public health and quarantine officers now face. Diseases have always followed lines of travel. When the travel is slow, there is time for the disease to flare up and burn itself out en route, before the next large community is reached. But when the rate of travel becomes faster than the rate of development of the germs, there is no safety zone to protect communities and countries from each other's plagues.

At present quarantine regulations in this country are directed against cholera, yellow fever, typhus fever, plague, small-pox and leprosy. Ships from abroad may call only at designated ports of entry. There quarantine officers of the U. S. Public Health Service are stationed to examine the ship's passengers and crews and cargo if necessary, and to receive from the captain the ship's bill of health, which states what diseases, if any, have occurred during the voyage or were prevalent at the last port of call, and when the ship was last fumigated. These precautions serve to protect us from outbreaks of the major disease plagues of the world. But when air travel becomes general, such measures may not be sufficient.

Without going to such extravagant lengths as aerial boarding stations, the U. S. Public Health Service has already detailed quarantine officers expressly for the inspection of airships at the landing field, before the passengers or crew debark. Such officers inspected the Graf Zeppelin on her arrivals at Lakehurst and Los Angeles. Plans for new airports now include provision for quarantine stations. The number of airports at any one locality is being limited, as are ports of entry for ships, in order to avoid the necessity for several quarantine, customs and immigration officers in one small area. Cities which now have quarantine stations for airships are Buffalo, Albany, Los Angeles, Brownsville, Texas; West Palm Beach, Miami, San Diego, San Juan, P. R.; Nogales, Arizona; El Paso, Newport, Vt.; Key West, St. Paul, Newark, N. J.; Detroit, and Seattle, which has two.

Other countries are making similar arrangements for inspection of air transports. The latest Canadian regulations provide that: "Aircraft arriving in Canada from foreign or overseas countries, (*Turn to next page*)

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subject to the same exemptions as are set forth in Section 13 of these regulations regarding ocean-going vessels, are required to undergo quarantine inspection on arrival before being allowed to make customs entry. All aircraft arriving in Canada from ports or places infected with quarantinable disease are required at time of quarantine to present bills of health in accordance with the requirements of Section 10 of these regulations." Unless operating exclusively between ports of the United States and ports of Canada, aircraft are subject to quarantine inspection on arrival in Canada before being allowed to make customs entry. The regulations are similar to those applicable to ocean vessels.

The classic example of the transmission of disease by air occurred in England early in the history of air travel. A British officer, flying home on leave, brought with him a dog which he had picked up in the trenches and made his pet. The dog developed rabies shortly after arriving in England, and through him an epidemic of the disease ravaged English dogdom. This marked the first appearance of the frightful disease in England for 16 years. Rabies attacks men as well as dogs, the disease being transmitted by the bite of mad or rabid dogs. Dogs may not be brought into England now until after they have been kept for a number of months in quarantine, where they are watched for signs of rabies, distemper and other diseases.

At present British health officials are worried over the development of the air and water route between Africa and South America, and the possibility of air lines across Africa from west to east. The introduction of yellow fever into India is the specter that gives these officials sleepless nights. South America, particularly Brazil, is the greatest yellow fever center in the world. The new route, combining planes and fast steamers, goes directly from Pernambuco, Brazil, where yellow fever is constantly present, to Dakar, in French West Africa, and thence on across northern Africa to Spain and France. The danger to these countries of importing yellow fever is considerable, but the greatest danger is that yellow fever may spread across Africa to the east and then make the short jump to India. The disease has never yet occurred there, but the mosquito in whose body the yellow fever germ

passes one stage of its development is found abundantly all over India. Her millions of people, who have never been exposed to yellow fever, are undoubtedly highly susceptible to it. One case of yellow fever brought into India would cause an overwhelming catastrophe. An epidemic has just been conquered at Dakar, in Africa. Using many hundreds of men and at a cost of \$20,000, Dakar was completely freed of mosquitoes. French Colonial officials are hoping to make this condition permanent, which would greatly lessen the danger of spreading yellow fever to Europe and India by air.

The situation in our own country is not so much better. For a quarter of a century we have been free of yellow fever, and rigid quarantine inspection and enforcement have kept this highly fatal disease out. But air travel has cut the distance between the United States and Central and South America to a matter of hours, while yellow fever takes five days to develop. New quarantine regulations will be required to protect us from this disease in the future. We cannot count on cases developing on the journey, and quarantine officers will need some way of determining which of a company of well men is going to develop yellow fever, or cholera, or plague, or typhus fever, if the airship has come from the East or the Near East, instead of from South America.

The terrors of a yellow fever or cholera epidemic are best remembered by the older generation of Americans, but influenza epidemics tolling hundreds of thousands of deaths are familiar to us all. The disease spreads like wildfire, when aided only by such ordinary means of travel as trains and boats. When aircraft becomes a factor, the result will be even more devastating.

The list of quarantinable diseases may be increased when air travel becomes more general. Scarlet fever, diphtheria, and epidemic spinal meningitis may have to be guarded against, as well as smallpox, yellow fever and cholera. At present these diseases, while serious and frequently epidemic, have not presented any great problem for quarantine officers. They are fairly universal and there is not much more chance of an epidemic being started by a foreigner than by a native. On the other hand, many inaccessible parts of the world are being opened up by the airship. In these

places scarlet fever and similar diseases are rare, and the danger lies in starting an epidemic in a highly susceptible group of natives by germs carried out by Americans or Europeans.

But it is not only the ills of man that may be spread by the worldwide development of aircraft travel. Our domestic animals have their own diseases, and there is a distinct possibility that these also may come via the air. Of course, only small animals possibly infected with diseases could come by plane—dogs and cats and canaries and prize chickens. But not all the diseases of animals require living carriers. Hoof-and-mouth disease of livestock, for example, lurks in the soil where afflicted cattle have pastured. Suppose some plane should run over such soil—there are wide areas in Europe thus accursed—and pick up just enough to plant the virus in an American field when it landed on this side? Fantastic—yes; but not impossible.

Similarly, the bacteria or fungus spores that cause the thousand-and-one diseases of crop plants, fruits and flowers are capable of being carried by plane. A wilted flower carelessly tossed overboard may be more destructive than a TNT bomb. One of the conjectures advanced to account for the sudden and mysterious appearance of the Mediterranean fruit fly in Florida last spring is that an airplane passenger threw away an orange he found to be "wormy," not knowing that the supposed worms were really the larvae of the dreaded insect pest.

And if the plane can be used in innocence and ignorance with such sinister results, what is to prevent its being used by deliberate scofflaws? It is hard enough to enforce the interstate quarantine against the European corn borer now, even with officers on all roads to stop automobiles and make sure no sweet corn or other possible carrier crosses the deadline.

It is becoming increasingly evident that our old system of seeking regional safety against diseases of man, beast and plant, against insect pests and noxious weeds by means of blockades and quarantines is bound to break down before the onrush of air traffic. We shall have to devise entirely new methods of defense against these dangers, as we have had to devise new weapons to meet the threat of military airships and airplanes.