



International

The ZR-3 in her old home—flying over the Brandenburg Gate in Berlin

The present type he considers large enough for commercial work.

In reply to questions as to safety and to security from storm, Dr. Eckener said in effect that our capacity for producing helium, the use of a heavier fuel than gasoline, and greater relative speed were the requisites. As to the last he is quoted as declaring that an increase of speed of the ZR-3 of five meters per second (say thirteen miles an hour) would enable the airship to avoid any threatening storms, and eliminate the danger of its being made a plaything by fierce air-currents. Germany, according to Dr. Eckener, could make world-circling Zeppelins if only the Versailles Treaty would permit. One newspaper report ascribes to Dr. Eckener the statement that before the ZR-3 started Germany offered to put the Zeppelin to an extreme test to prove its efficiency. The offer, he said, was to fly the ZR-3 to Lakehurst, back to Germany, and again to Lakehurst. The United States declined the offer, he added.

There is little probability that the Allies will consent to a reversal of their decision that Germany may not build huge aircraft; in all probability the great Zeppelin works will be dismantled. There is too much possibility that if Germany were to be allowed to build monster airships at will the symbolism of the Los Angeles, expressed by Secretary Wilbur as standing for "peace on

earth," might not permanently hold good.

The Radio Compass

WE all know that the ZR-3 received aid in fog and storm from wireless and radio on shore and on ships. The safety of both ships and air vessels at sea is constantly being better insured by invention. Prominent among the methods of help is that of the radio compass or direction-finder. It has been especially useful on the Canadian coast, where it has been definitely established. The first of the direction-finder stations was built near Halifax, in 1918, and already there are four more stations about the shores of New Brunswick and Nova Scotia, one at Cape Race, Newfoundland, and one at Pachena Point, Vancouver Island. In addition there are six radio beacons automatically transmitting signals for the benefit of ships possessing direction-finders of their own.

The radio compass, which was invented by Dr. Frederick Kolster, of the Bureau of Standards, Washington, during the war, simply determines the direction from which radio waves arrive at a receiving station. Under favorable conditions—that is, without natural or artificial barriers in the path of the radio waves—the impulses from a transmitting station approach the receiving station on a direct line of bearing; in other words, the direction in which the radio wave is

traveling is the bearing of the transmitting station from the receiving station. The apparatus may be installed at a shore station, and the responsibility for the accuracy of the bearings devolves upon the operator; or upon the ship, in which case the ship's operator takes the bearings and the responsibility.

"What is my true bearing?" comes the query from the air; whereupon the operator works out the degrees from the station and snaps the solution back to the ship. Another station at some distance does the same, and where the lines meet is the ship's position. That is all. Under normal conditions errors are not likely to exceed two degrees.

It is when ships meet with trouble on the high seas, 300 miles or more from land, that the value of having the direction-finder on board becomes apparent. The fate of the Norwegian steamer *Capto* is a fair illustration. She left Narvik bound for Sydney, Cape Breton, laden with iron. A storm played cat-and-mouse with her until it finally carried away her rudder. After two days' pounding of hurricane seas several stern plates were split, causing the water to make in the after tank and eventually putting the propeller shaft out of commission. While the men labored at the pumps the wireless operator sent out his S. O. S. calls. The *Furness* liner *Sachem* happened to be within a hundred miles of the *Capto*, and immediately began to search in the direction she imagined her stricken sister to lie. All day she continued the futile hunt, and at nightfall the case began to look hopeless. At this point a wireless was intercepted from the steamship *Montclare*, which ship was equipped with direction-finding apparatus. By its aid the exact position of the *Capto* was learned, and at 4:30 in the morning the *Sachem* came up with her and took her in tow. The sea had again been outwitted by science!

A Deadly Enemy of Cattle

A DISEASE of live stock, perhaps the most dreaded known to veterinary medicine, has appeared again in the United States, this time in Texas, almost immediately after it had been stamped out by heroic efforts in California. The malady is that known as foot-and-mouth disease. For many years the United States has built its defenses against this disease as strongly, almost, as it would against a powerful and treacherous en-

emy nation. The machinery of defense is an exceptionally rigid quarantine law administered by the Bureau of Animal Industry of the United States Department of Agriculture.

The Texas outbreak marks the fifth time that the Bureau of Animal Industry has been called upon to repel the invader. Three times the disease appeared in live-stock marketing centers, and was not allowed to spread to the farms. Once it broke out in Chicago when a National live-stock show was in progress. All except the most optimistic feared that the invading disease had made good its landing, but the fighting force contended that, so long as the disease could be kept from spreading to the open country, it could be eradicated. It was eradicated.

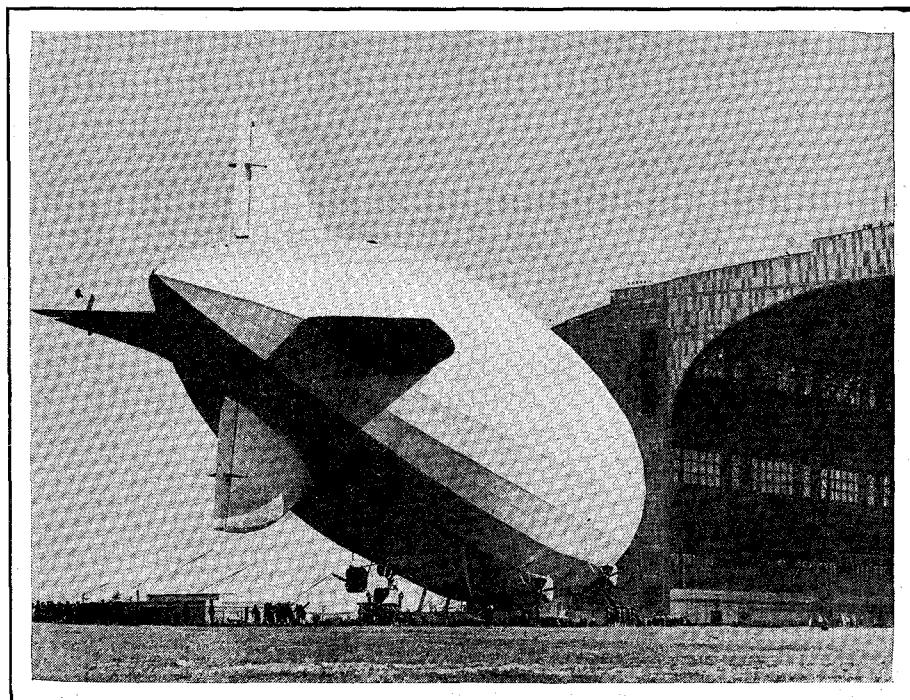
After an interval of eight years the disease appeared again, and this time it was in the open country, in the rough and difficult range region of California. There even the veteran soldiers were not sure that they could triumph again. Even Dr. John R. Mohler, Chief of the Bureau of Animal Industry, who has led every fight thus far waged against foot-and-mouth disease, must have had doubts, though he did not express them publicly. Again, by complete eradication of infected herds, the disease was stamped out, only to be discovered again on the Texas ranges.

This time the treacherous enemy came in by a roundabout way that took the defensive force somewhat off its guard. The affected animals were Brahman cattle brought from India. They were not permitted to be brought in direct, but had been held over for a long period in a non-infected country. Veterinary authorities are still puzzled as to how the infection could have lain dormant so long.

Infection has been found in only two herds, and is not thought to exist elsewhere. It is still within the cordon of the defending forces, and a fifth eradication is confidently predicted. No such fear is felt as was entertained when the disease broke out in California or at the International Live-Stock Show in Chicago.

An Uncontrollable Virus

WHILE the Bureau of Animal Industry has made a marvelous record in the eradication of foot-and-mouth disease, the United States can never feel safe from this devastating animal scourge



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The ZR-3 in her new home—arriving at the Naval Air Station at Lakehurst, New Jersey

until a cure is found for it. No effort is made now to treat the disease. Ruthless destruction of all animals exposed is the only method, the specialists say, by which we can be sure of preventing such a spread of the disease that it can never be eradicated.

During the California outbreak, as on the three other appearances in the United States, scientists were anxious to make experiments with the hope of finding a cure. In the main, these were doctors of human medicine. Most doctors of veterinary medicine are willing to leave experimentation with foot-and-mouth disease to their fellows of other countries. The Department of Agriculture has steadily refused the requests of the doctors. It has just as unyieldingly refused to permit its own men, among whom are many of the most eminent scientists in America, to experiment with this disease.

The virus of this malady, it is said, cannot be controlled by any means that science has yet discovered. Under the most careful methods known to scientists, it escapes, and herds at some distance become infected. Investigations were undertaken at Alfort, France, in especially equipped buildings, but were given up because the disease spread throughout the countryside. A similar thing occurred near Berlin. The British Government undertook experiments at sea, on an old war-vessel equipped as a laboratory, but gave up in despair because it was impossible to prevent the

healthy control animals from contracting the disease.

It is not good to think of exterminating patients, even animals, in order to control a disease, but the authorities are doubtless right in insisting upon this method. At least they have justified their course by so often stamping out the disease in the United States when experimentation and treatment have accomplished nothing in other countries. The United States, in fact, owes more than it realizes to its practitioners of veterinary medicine. Not only has foot-and-mouth disease been stamped out whenever it has appeared; but many dreadful diseases, such as rinderpest, have been kept out of the country entirely, mainly by the efforts of veterinary inspectors at ports of entry.

Not Really Brahman, but Zebu

THE fact that so-called Brahman cattle were the bearers of the foot-and-mouth infection which caused the outbreak in Texas will probably cause surprise to most persons. It is not generally known that the cattle of India have found a home in this country. They are not widely distributed, but have served a very useful purpose on the Gulf coast and in the interior of Texas. Because of their immunity to several diseases, notably the fever caused by the cattle tick, they have been used for crossing with native stock to produce an immune breed.

The name Brahman is generally ac-