

the Forum by Vice Admiral Emory S. Land, former Maritime Commission chairman and now Air Transport Association President, comes into effect.

One of the freedoms under the United Nations should be the freedom of travel, Adm. Land said. As a first step, he advocated the adoption of one simple form of passenger identification, and one equally simple form of property bill of lading for all nations of the western hemisphere. This, should eventually be extended to all members of the United Nations.

With relaxation of restrictive laws and regulations, he predicted the possibility of a large peace-time merchant fleet of from 15,000,000 to 20,000,000 tons, of which 7,500,000 tons would be for foreign trade.

Our foreign trade should amount to approximately \$10,000,000,000 yearly, Adm. Land predicted. This will generate 3,000,000 jobs in industry alone, in addition to absorbing the output of 1,000,000 people engaged in agriculture.

Influence of Helicopters

Helicopters in our backyards may have as great an effect on our cities as the automobile; how much is still largely a matter of speculation, Harland Bartholomew, Planning Director of the St. Louis Regional Planning Association, declared at the Forum.

The rapidly increasing volume of air transport, however, is already showing its effect on our cities in the need for the construction of many different types of air terminals, he added. The number of aircraft will increase from a prewar total of 25,000 to approximately 400,000 by 1950.

In our large urban areas there will be one or more major fields for scheduled main-line-passenger, mail, and express traffic, and separate fields for scheduled trunk-line freight service and feeder lines.

Secondary fields will serve commercial and chartered service, there will be numerous minor landing strips for private industrial use, privately owned personal planes, and schools, besides airports for military use.

Mr. Bartholomew predicted a comeback of the street-car. The old-fashioned trolley, with modern design changes, is still the most efficient transport unit for areas of moderately high population density. The trolley coach is expected to be introduced into a number of cities where its flexibility and absence of tracks are major factors.

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SEISMOLOGY

Path of Tidal Wave May Be Forecast

► WHEN ANOTHER earthquake on the ocean bottom produces a tidal wave, the destructive ocean sweep's arrival on any neighboring coasts may be more accurately forecast because of records kept of the Alaska wave that recently brought death and destruction to Hawaii.

Although submarine earthquakes rarely produce the destructive waves, records of tide stations at more than a score of points in the Pacific are being analyzed by the division of tides and currents of the Coast and Geodetic Survey to trace the course of the unusual wave that did develop in the Pacific. Records showing the exact time at which the tide gauges picked up the oscillations from the wave have been gathered from stations extending from Alaska to Chile and including such outlying points as Honolulu.

In predicting the wave that swept out of Alaska, scientists of Coast and Geodetic Survey fixed the time of arrival in Hawaiian waters within four minutes of the actual recorded time, it was reported. The readings show that the wave was not one long movement, but rather a series of sharp thrusts.

Reaching a top speed of about 600 miles per hour, the wave averaged 500 miles per hour in its fateful dash from the epicenter of the disturbance in Alaskan waters to Hawaii.

Despite the tremendous speed of the wave as it struck land, Coast and Geodetic Survey officials say that it lost speed near shore because of the shallower depth.

Records kept by a tide station at Valparaiso, Chile, 8,000 miles from the epicenter, revealed as marked oscillations as instruments at Honolulu, 2,300 miles from the origin of the wave.

Standard tide gauges maintained by the Coast Survey operate automatically and record tidal movements on a wide paper tape. Throughout the Pacific, the recent tidal wave was marked distinctly by most of these instruments.

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CHEMISTRY

New Kind of Mold Used in Citric Acid Production

► CITRIC ACID, heavily used in soft drinks, confectionery and medicines, is nowadays produced mainly by mold fermentation. An improvement in this process is the subject of U. S. patent 2,400,143 which has been issued to Prof. Selman Waksman, of Rutgers University, best known as discoverer of streptomycin and pioneer investigator of antibiotics generally.

One difficulty that has beset mold production of this acid is that the mold culture also produces oxalic and gluconic acids at the same time, necessitating costly separation processes. Prof. Waksman uses a different species of the *Aspergillus* mold from that commonly employed, and conditions the sugar solution on which it feeds with salts of iron and zinc. He states that in this way he is able to obtain an output of practically pure citric acid.

Rights in his patent are assigned to Merck and Company, Inc.

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