

Do You Know?

Approximately 20,000 species of *trees* in the world have economic value.

Agricultural production in continental Europe in the World War I period reached its lowest in 1919, the year after the armistice; it was about 25% below normal.

Scale insects fasten themselves to the surface of a plant, cover themselves with wax, and remain at the one spot for the rest of their lives.

A *white powdery product* of sand, recently developed, gives rubber compounds the same qualities obtained through the use of carbon-black; with the new material rubber overshoes need no longer be black.

Gizzards in birds, in which the food swallowed is ground up, working in conjunction with powerful gastric juices, perform amazing feats; sea ducks, for example, swallow whole crustaceans, and reduce the shells to fine sand.

Non-alcoholic beverage is made in Germany from sugar beets; the beets are steamed in an autoclave for 15 minutes under one-half atmosphere pressure, then the juice is squeezed out in a cider press, filtered, bottled and carbonated.

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AERONAUTICS

Safe All-Weather Flights

More important at present than economy, the development of speed or any other factor in air transport are safe instruments for blind flying.

► ALL-WEATHER FLYING that will bring regularity in service is needed for air transport development more than greater speed or economy, Dr. Edward Warner, president of the Interim Council of the Provisional International Civil Aviation Organization, told the George Westinghouse Centennial Forum in Pittsburgh.

More than half of the improvements in air transport that will be brought about by science and technology in the next ten years will lie in the development of navigational aids and blind landing systems that will permit flying under all weather conditions, Dr. Warner declared.

Some system of instrument landing, however far from perfect, must be adopted immediately, he said. Present radio approach methods, designed only to bring the pilot to the edge of the airport, have brought no substantial change in the worst allowable weather conditions under which flights may be authorized.

Experimental blind landing systems have been used with almost perfect results in military operations, permitting flights in all but the most violent thunderstorms and icing conditions, Dr. Warner continued. It will be the job of the PIACO during the coming summer to make a choice from the available systems and to obtain its international acceptance.

Control of the rapidly mounting traffic at airports continues the outstanding problem still demanding solution. Dr. Warner predicted that it may be found in some form of search radar system to be installed in each aircraft. Such a device will enable the pilot to tell at a glance the position, direction and speed of neighboring planes so that he can land, when flying blind, with the same certainty and safety as under conditions of perfect visibility.

The first general assembly of the PIACO met May 21, 1946, in Montreal, and the work will continue throughout the summer. The 44 nations that are now active members will tackle these problems. In addition, Dr. Warner said, the representatives of the 44 nations will try to remove other obstacles in the way

of free international air transportation.

They will adopt an international air line operation code designed to bring about a minimum of delay and inconveniences to air travellers arising out of numerous visa, passport, and customs regulations. Proposals have been made for all nations to grant six-month visas, not to require a separate visa for each entry, to exempt aircraft in transit from inspections, and to give crews and passengers assistance in the event of unscheduled emergency landings.

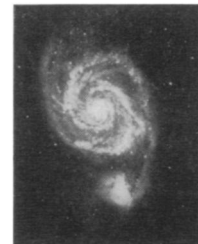
International agreement on all these points is needed because during the next summer the airlines of six nations will be maintaining regular trans-Atlantic service. More than this number of nations have already established operations between England and the continent of Europe, Dr. Warner reported.

In the United States alone, statistical records show an increase between 1935 and 1945 of 1200% in passenger traffic, as much as 1800% in express, and 1500% in mail carried by our air lines, Dr. Warner pointed out. He predicted that about 50,000 people will cross the Atlantic by air this year, and from two to three times that number during 1947.

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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.

Science News Letter, June 1, 1946

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.

Science News Letter, June 1, 1946

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.

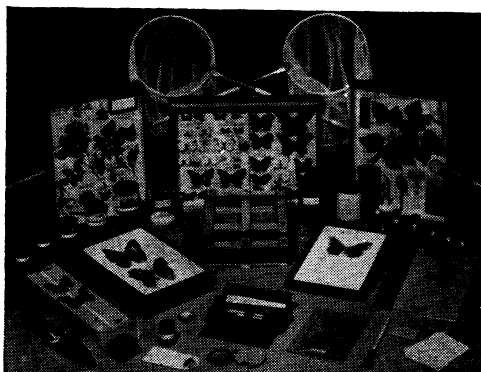
One difficulty that has beset mold production of this acid is that the mold culture also produces oxalic and gluconic acids at the same time, necessitating costly separation processes. Prof. Waksman uses a different species of the *Aspergillus* mold from that commonly employed, and conditions the sugar 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.

Science News Letter, June 1, 1946

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