



Under-Water Hayfields

**N**O MORE hay to feed the cows? Then let them eat water-lilies.

This is not an Alice-in-Wonderland parody on the famous phrase credited with helping to provoke the French Revolution. It is a serious suggestion by a practical chemist who has been analyzing hay made from water plants, and finds that it has distinct possibilities. If the drought does not let up next summer, we may see farmers who have access to weed-choked ponds and shallow lakes fattening their livestock on this now neglected vegetation.

These weeds can be dried out into hay richer in some essential nutrient elements than any of the conventional fodders except alfalfa and other legume hays.

Experiments demonstrating this have been performed by scientists working independently of each other at two institutions: Dr. H. J. Harper and H. A. Daniel at Oklahoma A. and M. College, and Dr. Ross Aiken Gortner at the University of Minnesota. The suggestion that lakes be harvested for hay, at least in emergency years, comes from Dr. Gortner.

The water plants analyzed by Dr. Gortner included practically all species that grow in the Minnesota lakes. They were found to excel especially in "ash," or mineral content, and in protein. The crude protein content of the water plants ranged from 10 to 19 per cent., according to species. Yellow water-lilies showed up especially well, with 17 per cent. crude protein. Timothy hay has only 7 per cent. The legume hays range from 16 to 21 per cent. protein.

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Very good vinegar can be made from honey.

## AERONAUTICS

## Urge U. S. Airships for Trans-Atlantic Service

**T**HE American flag will fly from airships crossing the Atlantic on regular commercial schedules if Congress implements the Federal Aviation Commission's recommendation for "the early inauguration of an experimental trans-Atlantic airship service to meet the competition of the new foreign ocean liners and of a projected foreign airship line."

A five-year program would cost \$17,000,000 and would furnish two commercial airships of the Zeppelin type for service to and from Europe, a commercial airship terminal in the eastern United States and a "metal-clad" airship for South American service, as well as funds for research on untried types. The airships would be leased or chartered for commercial operation, but the Navy would be able to put them into instant service in wartime.

Recalling that the Graf Zeppelin has been carrying paying passengers for six years, three years of which have been spent in regular operation across the South Atlantic, the Federal Aviation Commission says that airship operation gives America the chance to capture the cream of the mail and first class passenger and express traffic to and from Europe. Now American shipping can not compete with the present or contemplated express surface liners supported by the British, French, German and Italian governments. To build but one of a necessary pair of express liners for weekly sailings would cost between \$30,000,000 and \$40,000,000, while that sum would provide a fleet of airships with terminals to give a twice-weekly sailing with the crossing time cut in half.

America's monopoly of helium as a safe, non-inflammable airship lifting gas, used instead of hydrogen, gives it a marked advantage over other nations. Moreover, surplus helium could be furnished the German airship interests with the understanding that they were not to compete with the American airships.

At Akron the Goodyear interests have the complete airship factory that made the Akron and the Macon for the Navy. It has been idle, except for research, for a year and the Federal Aviation Com-

mission urges further construction work to keep the facilities intact. A training airship for the Navy to replace the German-built Los Angeles, now eleven years old, is urged.

Since the United States is the home of the only metal-covered airship ever put into service, the Commission recommends the construction of an airship of this type. The metal-clad airship was built at Detroit.

Praise for the research work of the National Advisory Committee for Aeronautics and the Weather Bureau, coupled with the recommendation that the Weather Bureau be transferred to the Department of Commerce, is contained in the Commission's report.

It is urged that the N. A. C. A. remain the central agency of governmental research in aeronautics and the coordinating body for research and development in aviation. N. A. C. A. research is responsible for the best qualities of present-day aircraft, the report observes, and the government's research has "paid for itself repeatedly in the improved service that aircraft have been able to render as a result." The making available of aviation research funds to university and research organization through the N. A. C. A. is also advised.

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