

ORNITHOLOGY

Weather Affects Migrants

Successive days of cold temperatures appear to be the "trigger" that sends waterfowl on their long southward migration in the fall.

► A RECENT spectacular migration of waterfowl down through the central part of North America may give some answers to the puzzle of migration. It was a once-in-a-lifetime opportunity to gather the facts on and analyze a truly great movement of birds. Fortunately a large number of observers were on hand when more than one million birds poured down along the Mississippi Flyway in three days.

The Mississippi Flyway is one of several paths taken by migrating birds. As its name indicates, the birds follow the course of the Mississippi River and its tributaries. On Oct. 31, Nov. 1 and 2, 1955, a mass movement of waterfowl began from the Great Plains of Canada. Refuges along the route were filled to three times their normal seasonal quota of southbound birds; some even had 12 times as many. For the first time in their lives, some men looked skyward and saw the blue darkened by thousands of swiftly flying birds. Naturalists observing the migration from airplanes were literally enveloped in their work. Hunters had a "field day" as some flocks passed only a hundred feet overhead.

Before Oct. 31, there had been only a small, steady trickle of ducks and geese down into the Mississippi Flyway, observers report. Something happened on that last day in October to change the trickle to a flood.

What happened was a change in the weather.

Several aspects of the weather, such as wind direction, snow or rain, barometric pressure ("highs" and "lows"), and temperature, apparently influenced ducks and geese in their fall migration. It seems, however, from comparisons of weather data for the three-day spectacle that temperature is the important determinant.

Low pressure areas in Canada resulted in a southward flow of a mass of continental Arctic air. The low temperatures resulting triggered the flight from the Canadian and United States' great plains.

Interestingly enough, Frank C. Bellrose of the Illinois Natural History Survey Division points out in a report of the migration that the flight moved faster than the cold air mass. The birds preceded the Arctic air at Winnipeg, Canada, and Peoria, Ill. In between these places, at Minneapolis and at Memphis, the cold front speeded up and arrived with the birds.

(Persons interested in weather prediction might consider these findings as sufficient reason for taking the winter woolens out of storage whenever a large number of migrating birds is seen overhead in the fall of the year.

While a small amount of snow had fallen before the great migration began, naturalists

do not believe it was deep enough to affect seriously the birds' feeding on waste grain in harvested fields. Winds also varied so that their influence in initiating the flight was probably negligible. The migrating flocks seldom had a tail wind to help; the winds, including those at about 2,000 feet and near ground level, were only partially favorable for southward migration. Altogether wind conditions, turbulent air, snow showers, and low, dense and extensive clouds, made for hazardous flight and difficult navigation.

Successive days of cold appear to have been enough to put the birds to flight even if other conditions were unfavorable.

Many thousands of ducks made the long flight in two days. Trip length varied between 1,400 and 2,000 miles depending on which of the waterfowl marshes in Canada the birds had left. At an average speed of 40 miles an hour, it seems likely that some birds made the long migratory flight without stopping.

No one factor seems to encompass all the influences on migration. Better food, warmer climate, more shelter, a drive toward one special place where breeding takes



FLYING VEHICLE—C. C. Utz, executive engineer for the defense engineering group at Chrysler Corporation, holds a model of the wingless flying machine developed for the U. S. Army Transportation Corps. Twin rotors are set within barrel-like ducts to provide lift and thrust. One man controls the entire flight by means of simplified controls and preliminary test model data have proved the "soundness" of the concept," Mr. Utz said.

place and continuation of the species is assured, all are influences on some migratory animal or bird.

It seems likely that when the puzzle of migration is solved there will be not one solution but many.

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ORNITHOLOGY

Diving Ducks Hurt By Dry Weather

► DIVING DUCKS, the canvasback and redhead among them, have been hit hard by three years of drought.

As a result, the U. S. Fish and Wildlife Service reports, hunters are being restricted in the number of these ducks they can take. Even so, the wildlife experts have expressed serious concern over the diving ducks' survival.

In some areas of the United States and southern Canada where the migratory waterfowl nest and are raised, the number of ponds is now less than half what it was in 1955. Canvasback and redhead ducks, which build their nests in marshes with the nest just inches above the water, were particularly hard hit by the drought.

The 1958 winter waterfowl survey found one-third as many canvasbacks along the Atlantic and Mississippi flyways (routes taken by the migrating birds) as in 1954. With almost half the canvasback population taken each fall hunting season, the species' survival is precarious.

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METEOROLOGY

Tornado Occurrence Charted for U. S.

► EIGHTY-NINE PERCENT of the tornadoes in the United States occur between Feb. 1 and Aug. 31. Some 68% occur during the four months between April 1 and July 31. Most twisters strike between noon and midnight.

These figures on tornadoes were compiled by J. T. Lee of the U. S. Weather Bureau's Severe Local Storms Center, Kansas City, Mo., from a study of the 3,204 twisters recorded in the United States during the period 1950 to 1956.

He found an average of 458 tornadoes occurred each year from 1950 to 1956, compared to 149 per year for the period 1916 to 1950. This increase in the number of tornadoes in recent years is attributed to better reporting, not to an actual increase in the number of storms.

Only those tornadoes with funnels touching the ground were included in Mr. Lee's study. Funnel clouds aloft were not included because of the more likely chance of mistaken identity.

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Allergies are not inherited but the tendency to develop one can be.

Although the continental shelves extend out from land for distances ranging from a few to many hundreds of miles, the depth of water over them is generally less than 600 feet.