



Science News-Letter

The Weekly Summary of Current Science

Reg. U. S. Pat. Off.



A Science Service Publication

Edited by Watson Davis
Vol. XI No. 316



10¢ a copy \$5 a year
April 30, 1927

ZOOLOGY

Bird Migration Mystery Still Unsolved

By MARJORIE MACDILL,

The great marathon of the birds is now on! They are sweeping northward on the last lap of their long journey, propelled by the indefinable urge that takes them back to the scenes where they were born. Some have attained their goal and are already in the throes of nest building and family raising. Others loiter near our dooryard a day or two, enchant us with sporadic bursts of alien melody, and then pass on into the unknown.

Three weeks ago the barn swallow, twittering on the telephone wire, was circling the fields of Alabama. Two weeks before that he was in Porto Rico. The white throated sparrow, up from Georgia, lingers a week and precipitates many an attack of spring fever with his disturbing plaintive whistle, "Sweet, sweet, sweet, Canada, Canada, Canada." Tomorrow he will be gone and in another week he will be among the sharp-spined spruce trees and cold ice-fed streams of the North Woods.

Where Birds Spend the Winter

The wonder and the mystery of bird migration have attracted the interest of people since the beginning of history. Remarkable and manifold theories have been devised to account for the annual disappearance of birds in the fall and their reappearance with the rejuvenation of the earth in the spring. Chief among these has been the theory of hibernation which was first set down by Aristotle about 300 B. C. Birds, according to this idea, went into a torpid state in the fall and remained tucked away asleep in caves and hollow trees until the cold weather was over. Certain species, notably swallows, were thought to submerge in marshes and pass the winter ensconced in the mud at the bottom of ponds.

Some of the modern theories are

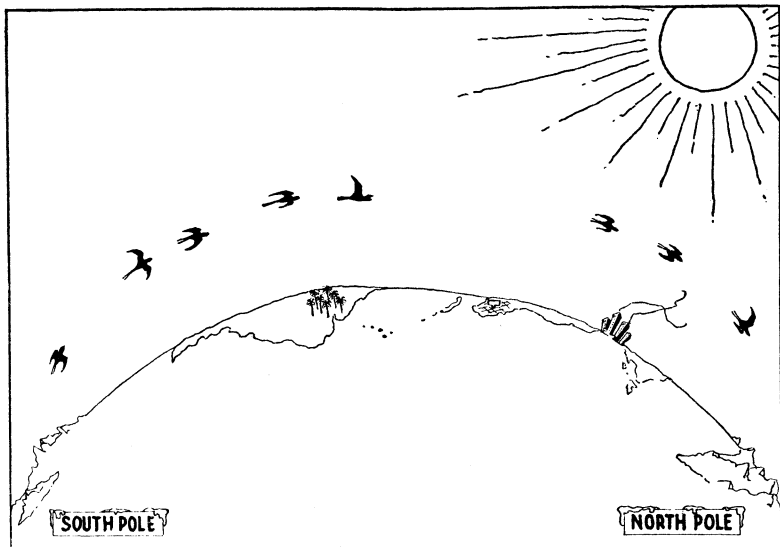
fairly bizarre, and in many ways migration is as much of a mystery as ever, but the growing practice of bird banding and the careful observations of ornithologists in the field, are gradually uncovering considerable portions of the hidden half of bird life that transpires between September and March.

Dr. Alexander Wetmore, president of the American Ornithologists' Union and assistant secretary of the Smithsonian Institution, has spent long periods in the interior of southern South America, seeking the answer to some of the whens, wheres, and whys of bird migration that ornithologists have been struggling with for the last 200 years. He has been successful in answering several "wheres," and in adding his bit to the numerous scientific theories advanced as to the "why" of bird travels. But it would take a super-genius to work out an explanation to tell how a tiny warbler no bigger than one's thumb can fly

across the Gulf of Mexico, or how the golden plover makes his marvelous non-stop flight of 2,400 miles over the Atlantic from Nova Scotia to the Lesser Antilles or the northeast coast of South America!

The barn swallow and the bobolink fly the farthest south of any of our well-known and familiar birds, according to Dr. Wetmore. These hardy little *voyageurs* invade the pampas of Argentina, making a round trip journey of over 10,000 miles there and back. A few lusty individuals of the yellow-billed cuckoos, olive-backed thrushes, nighthawks and cliff swallows get down into the Chaco of northern Argentina and Paraguay, but most of our erstwhile dooryard friends do not penetrate very far below the equator. Mexico is far south for a catbird or a bluebird, while our migrant orioles do not get much below Venezuela or Colombia.

(Just turn the page)



ARCTIC TERNS FLY 11,000 MILES from the Antarctic to their nesting grounds close to the North Pole. They manage to spend almost all their days in the light of the midnight sun.

INDEX TO THIS ISSUE

American Philosophical Society Meeting	275	Dellinger, J. H.	279	Lawrence, Ernest O.	274	Radio and Sunspots	279
American Physical Society Meeting	273	Doctorates Conferred	281	Loomis, A. L.	272	Radio Predictions for Atlantic Storms	275
Anniversaries of Science	283	Education by Mail	281	Lorentz, H. A.	281	Saber-Tooth Tiger Find	275
Ashman, Richard	283	Explorations, Early	283	Mail, Education by	281	Sinclair, W. J.	275
Bauer, Louis A.	279	Fossils, Grand Canyon Yields	271	McAtee, W. L.	281	Sound Waves, Inaudible	272
Beams, J. W.	274	Freud, Birth of Dr. Sigmund	283	McCormack, John W.	281	Steam Power, Borings Yield	283
Benedict, Francis G.	272	Frison, Theodore H.	281	Map, First Printed	281	Storms, May, Predict Atlantic	275
Bird Migration Still a Mystery	269	Grand Canyon Yields Fossils	271	Marston, Leslie R.	281	Strock, M. S.	279
Birds and Woodlots	281	Gravity Value, New	273	Masson, Irvine	281	Sunspots and Radio	279
Borings Yield Steam Power	283	Hassinger, H.	281	Moon Lacks Common Rock	271	Swann, W. F. G.	274
Bug's-Eye View	279	Heyl, Paul R.	273	National Academy Meeting	271	Temperature, Measures Tiny	272
Burgess, G. K.	273	Hill, A. V.	272	Nature Ramblings	279	Tiger Find, Saber-Tooth	275
Chemistry, Three Centuries of	281	Hull, Callie	281	Orchid Sanitarium	275	Weight Lost in Breath	272
Child Development, Directory of Research in	281	Hydrogen Not Changed	283	Photoelectric Haftone Cuts	275	West, Clarence J.	281
Day, Arthur L.	283	Insect Types	281	Photoelectric Promptness	273	Wetmore, Alexander	269
Death Whisper's Tricks	272	Ives, Herbert E.	275	Physics, Guide to	281	White, Dr. David	271
		Jovian "Northern Lights"	274	Physics, Problems of Modern	281	Wood, R. W.	272
		Judd, Neil M.	271	Pickard, G. W.	279	World Map, First Printed	281
		Keppel, Frederick Paul	281	Psychotherapy	283	Wright, F. E.	271
		Laplace, Death of	283	Pueblo Bonito	271	Yerkes, Robert Mearns	273
				Radio Accuracy, Greater	279		

(Continued from page 269)

Bird Migration

Long distance bird fliers who penetrate into the interior of Argentina and down into Patagonia apparently have mapped out three southward routes of travel. One via the Brazilian coast is patronized most by shore birds. A second is along the Pacific, taking in the mountain scenery of the Andes, while the third is south along the interior river systems. They follow the advance of the southern spring below the equator, disport themselves in the southern summer while it is winter here, and retreat back toward their nesting grounds with the coming of the northern spring. Thus they manage to keep in an eternal Palm Beach atmosphere of spring and summer.

It is no wonder so many of the ancient pagans timed their festivals of rejoicing at the return of spring by the reappearance of the migrating birds. In Macedonia today bands of children pass from house to house at the beginning of March carrying a swallow carved out of wood and singing that the swallows have returned and with them the spring.

Chippeway Indians evolved a New-World bluebird of happiness myth all their own, in their belief that the bluebird brought summer back to them on his azure wings.

Causes of Migration Still Unknown

The regularity of the reappearance of birds every spring in their familiar chosen haunts for home building has led to many theories to account for their amazing sense of direction. Some scientists say that they have a magnetic sense and are drawn toward a magnetic pole. Others maintain that a nasal sense enables them to identify air currents. Telepathy and hereditary memory are other vicarious suggestions that have

(Continued on page 277)

News-Letter Features

Born over four years ago of the demand and interest of those individuals who had caught a glimpse of *Science Service's* news reports to newspapers, the SCIENCE NEWS-LETTER has since proved interesting to laymen, scientists, students, teachers and children.

Into the pages of the NEWS-LETTER are fed the cream of *Science Service's* output directed at the newspapers of the world. To this is added material especially prepared.

Turn the pages and note:

It is a *separable magazine*. You can clip or tear out any article without losing or damaging another article on the other side.

Each article is automatically *indexed* by the key word printed above its heading. Articles can thus be filed easily into any system of classification.

Each article is automatically *dated* by its last line.

The current *news* of science, reported for *Science Service* by its own staff and correspondents throughout the world is presented and commented upon in each issue.

Books are *reviewed in brief* as they are received from the publishers.

The classics of science and striking passages from current books, addresses and periodicals are carefully selected and published.

Important *anniversaries* of science are appropriately noted week by week in a special department.

Regular articles tell of the happenings in the *skies* and in the great *outdoors*.

Photographs aid in the telling of the week's science.

Great care is taken to keep its editorial content not only *interesting* but *accurate* as to fact and implication.

The *Science News-Letter* is **copyrighted and is sold with the understanding that it is for personal, school, club or library use only. Publication of any portion is strictly prohibited.**



SCIENCE NEWS-LETTER, The Weekly Summary of Current Science. Published by Science Service, Inc., the Institution for the Popularization of Science organized under the auspices of the National Academy of Sciences, the National Research Council and the American Association for the Advancement of Science.

Publication Office, 1918 Harford Ave., Baltimore, Md. Editorial and Executive Office, 21st and B Sts., N. W., Washington, D. C. Address all communications to Washington, D. C.

Entered as second class matter October 1, 1926, at the postoffice at Baltimore, Md., under the act of March 3, 1879. Established in mimeograph form March 13, 1922. Title registered as trade-mark, U. S. Patent Office.

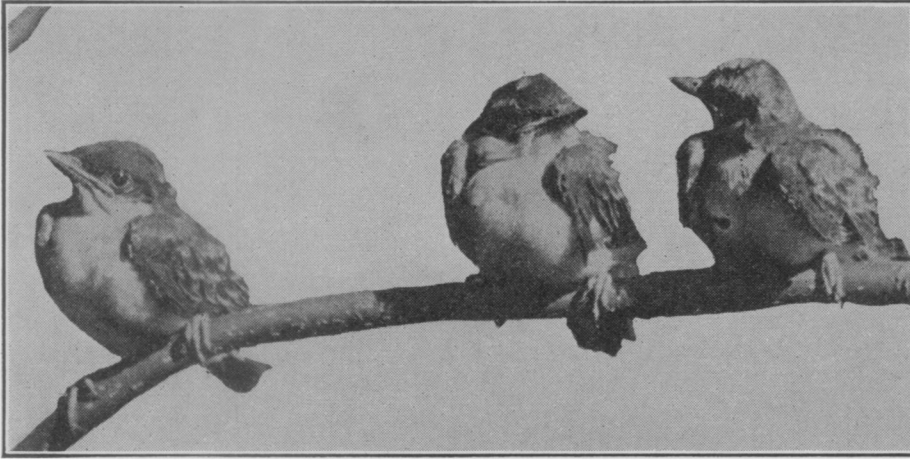
Subscription rate—\$5.00 a year postpaid. 10 cents a copy. Ten or more copies to same address, 6 cents a copy. Special reduced subscription rates are available to members of the American Association for the Advancement of Science.

Advertising rates furnished on application.

Copyright, 1927, by Science Service, Inc. Reproduction of any portion of the SCIENCE NEWS-LETTER is strictly prohibited since it is distributed for personal, school, club or library use only. Newspapers, magazines and other publications are invited to avail themselves of the numerous syndicate services issued by Science Service, details and samples of which will be gladly sent on request.

Staff of Science Service—Director, Edwin E. Slosson; Managing Editor, Watson Davis; Staff Writers, Frank Thone, James Stokley, Emily C. Davis, Marjorie MacDill; Sales and Advertising Manager, Hallie Jenkins.

Board of Trustees of Science Service—Representing the American Association for the Advancement of Science, J. McKeen Cattell, *Vice-President and Chairman of the Executive Committee*, Editor, Science, Garrison, N. Y.; D. T. MacDougal, Director, Desert Laboratory, Tucson, Ariz.; M. I. Pupin, Professor of Electromechanics, Columbia University, New York City. Representing the National Academy of Sciences, John C. Merriam, President, Carnegie Institution of Washington; R. A. Millikan, Director, Norman Bridge Laboratory of Physics, California Institute of Technology, Pasadena, Calif.; A. A. Noyes, Director, Gates Chemical Laboratory, California Institute of Technology, Pasadena, Calif. Representing National Research Council, Vernon Kellogg, *Treasurer*, Permanent Secretary, National Research Council, Washington, D. C.; C. G. Abbot, Director, Astro-Physical Observatory, Smithsonian Institution, Washington, D. C.; Victor C. Vaughan, Professor Emeritus of Hygiene, University of Michigan. Representing Journalistic Profession, John H. Finley, Associate Editor, New York Times; Frank R. Kent, Baltimore Sun; Mark Sullivan, Writer, Washington, D. C. Representing E. W. Scripps Estate, W. E. Ritter, *President*, University of California; Robert P. Scripps, Scripps-Howard Newspapers, West Chester, Ohio, Thomas L. Sidlo, Cleveland, Ohio.



THE WARLIKE KINGBIRDS look aggressive even when they are babies. (Courtesy of U. S. Biological Survey).

Bird Migration

(Continued from page 270)

been advanced. It has also been suggested that they guide their course by the stars, the moon and the sun, though this does not take into consideration foggy weather. The faculty for orientation in carrier pigeons is well-known and has been developed by fanciers to an amazing degree in certain strains of birds by breeding. This problem of orientation will probably be eventually cleared up by experimentation, but at present no ornithologist has an explanation to offer that is very lucid or convincing.

The reason at the bottom of the long, long trek that the inmates of the bird house on the backyard fence take twice a year is a mystery that can be little more than guessed at. Science is as much in the dark as ever over why they do it. The entire act of migration, according to Dr. Wetmore, is so utterly complex that no single factor may be ascribed as the absolute cause. It has arisen, he believes, from movements induced by seasonal and climatic changes until it has become a hereditary instinct that is now actuated by physiological causes.

Birds Fly Low, Say Aviators

Early ornithologists used to think that most migration took place above 15,000 feet, putting their faith in the idea that flying was easier the higher up the birds were, that the difficulties of flight increased as they came nearer to earth. The experience of aviators shows, however, that just the opposite is true. With the greater altitude there is more difficulty in maintaining height and speed. This is partly due to motors, and though birds are exempt from the drawbacks of engine trouble, there is ample evidence that

they feel the lack of buoyancy in the upper reaches. This condition has less effect on the broad-winged hawks, vultures and cranes with large wing surfaces, but operates heavily against the little fellows who must keep their tiny wings going rapidly to maintain flight.

Most migration is now thought to take place below 3,000 feet. Aviators rarely see birds above 5,000 feet, though some shore birds have been noted as high as 10,000 and 12,000 feet. In the Himalayas storks have been observed around 6,000 feet above the earth and 20,000 above sea level.

The greatest normal speed for a bird that has been recorded is held by the common swift of Eurasia, which was observed from an airplane to be jogging along at 70 miles without hurrying. Ducks and geese fly from 42 to 57 miles an hour, while the smaller perching birds, the flivvers of the bird world, range between 18 and 37 miles.

Some Like It Cold

The preference for perpetual spring displayed by the barn swallow, the bobolink and many other birds, is not shared by the Arctic tern, that makes the longest migratory flight known. Half way around the world apart are its summer and winter homes, for it makes its nest close to the North Pole, and has as a southern winter resort the icebergs of the Antarctic. The eleven-thousand-mile jaunt, changing from northern to southern ice fields and vice versa, brings the Arctic tern his longest contacts with darkness. In his daily life around the poles he lives in the almost continuous though chilly light of the midnight sun.

The nest of another bird of the North, the surf bird of Alaska, has recently been discovered for the first time. Though he spends most of his

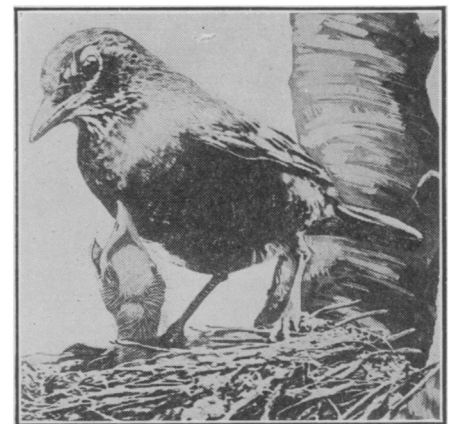
life on the rocky reefs of the Pacific Ocean, the surf bird turns to the mountains when he wants to raise a family. His home site was discovered for the first time last summer on Mount McKinley, by scientists from the University of California. Father surf bird, they found, is a model husband. He not only does most of the hatching of the eggs, but is much the more ardent defender of the home when it is beset by marauders. Mother is an emancipated woman who disports herself with her friends a considerable share of the time, stopping in only occasionally to relieve Father in keeping the eggs warm when he has to go out for a bite to eat.

Private Life of House Wrens

A kind of ornithological detective agency located near the outskirts of Cleveland, Ohio, has brought to light many previously unsuspected facts about the actions and movements of birds that may eventually shed some light on the migration problem. The tradition of lifelong mating, or of the remating of birds with the return to the old familiar nesting grounds in the spring, is pretty much of a fallacy with some species, according to S. Prentiss Baldwin, the Cleveland ornithologist who has made an intensive study of house wrens. His researches show that the services of a trained genealogist would be required to keep straight the exact degree of relationship in three generations of house wrens, so complicated are their intermarriages.

Plenty of food, water, and bird houses plus freedom from cats and English sparrows attract large numbers of wrens every year to his farm, where Mr. Baldwin plays Sherlock Holmes with a corps of Dr. Watsons in the shape of young students of ornithology to help him.

(Just turn the page)



FATHER ROBIN pridefully regards his offspring.

Bird Migration

(Continued from page 277)

They watch the courtship and domestic controversies of the occupants of every bird house, keep a record of each egg and, when it hatches, weigh the young bird and tag him with an identification band. This enables them to keep track of his movements as long as he continues to sojourn around those parts. Expert handling is necessary not to break the eggs, yet not one young bird has been lost as the result of having his "hospital" record taken. With careful treatment the wrens become accustomed to this impertinent surveillance of the intimate details of their family life, which leaves them about as much privacy as a gold fish, and they even grow to expect the daily inspection of their homes. Invaluable data on the nesting habits, the period of incubation and insight into the private life of wrens generally have been gained by this intensive study of typical bird life.

Bird Banding Traces Migration

Much of the mystery of the movements of birds during migration has been cleared up by the gigantic system of bird census-taking instituted by the U. S. Biological Survey, known as

bird banding. Tempted by an alluring display of food, birds are enticed into large wire traps where the operator secures his "prey" and attaches a numbered aluminum band to the leg. This serves as an identification tag by which the movements of that particular bird are traced at any other trapping stations where he may happen to stop.

Birds have a highly sensitized nervous mechanism, and gentle and intelligent handling during the banding process is a factor of prime importance. It is needless to state that those that are roughly approached never come back, while the data afforded by the banding of birds that receive injury is of no value. They respond to kindly treatment, however, and there are records of many that return to the same locality year after year who use the traps as a sort of restaurant where they become regular patrons.

Any bird student over eighteen years old, who satisfies the authorities of the Biological Survey that he is competent to identify birds and turn in the desired information, may receive a federal permit to operate a trapping station. He should record the number and name of every bird he bands as well as that of every "return" and every visitor to the station who already has a band. This information is sent to the U. S. Biological Survey where it is filed and analyzed by experts working on the migration problem. From this source ornithologists expect some day to get answers to such questions as, how long birds live, how long birds stay married, how fast they travel during the migratory season, and others of greater scientific import, if of less sociological interest.

Science News-Letter, April 30, 1927

The first men in Scotland came there about 9,000 years ago, a British anthropologist has concluded.

Mt. Izalco, in Salvador, is said to be growing 50 feet taller each year, as a result of volcanic eruption.

A machine which makes cobwebs out of liquid rubber, ether, and glue is an aid to realism in the movies.

The number of ostriches in British South Africa has dropped from 776,000 in 1913 to 163,000 in 1925.

Belief that death from heart disease occurs without warning is discounted by figures showing that such deaths are usually preceded by at least ten years of disability.

Have You A Few Friends

who do not know the
SCIENCE NEWS-LETTER?

As a subscriber to the most unusual scientific magazine of the hour you are, we hope, enthusiastic. We know you appreciate obtaining scientific news months before it can possibly be printed in book form.

The tastes of your friends harmonize with your own—send us the names of several men and women who will be interested in obtaining scientific NEWS.

We shall be glad to send, free to your intimates, a copy of the weekly SCIENCE NEWS-LETTER.

(Kindly state whether you wish your name mentioned in the sending of sample copies.)

M _____

M _____

M _____

SCIENCE SERVICE

21st and B Sts.
Washington, D. C.

TIME

is the important factor in all activities

SAVE IT

by using

The Wistar Institute
Bibliographic Service

which brings to your table authors' abstracts of all papers about to appear in the:

Journal of Morphology and Physiology
The Journal of Comparative Neurology
The American Journal of Anatomy
The Anatomical Record
The Journal of Experimental Zoology
American Anatomical Memoirs
American Journal of Physical Anthropology
Folia Anatomica Japonica (Tokyo, Japan)
Biological Bulletin
The Journal of Parasitology
Stain Technology
Australian Journal of Experimental Biology
and Medical Science (Adelaide, South
Australia)

Advance Abstract Sheets,
\$3.00 per year
Bibliographic Service Cards,
\$5.00 per year
Both appear before the complete
articles are published.

THE WISTAR INSTITUTE
Thirty-sixth St. & Woodland Ave.
PHILADELPHIA PENNSYLVANIA