Comments and Communications

Do Fish Fall from the Sky?

In view of the prevailing skepticism about rains of fish, my own observations of this phenomenon may interest the readers of *Science*.

A rainfall of fish occurred on October 23, 1947 in Marksville, Louisiana, while I was conducting biological investigations for the Department of Wild Life and Fisheries. In the morning of that day, between seven and eight o'clock, fish ranging from two to nine inches in length fell on the streets and in yards, mystifying the citizens of that southern town. I was in the restaurant with my wife having breakfast, when the waitress informed us that fish were falling from the sky. We went immediately to collect some of the fish. The people in town were excited. The director of the Marksville Bank, J. M. Barham, said he had discovered upon arising from bed that fish had fallen by hundreds in his yard, and in the adjacent yard of Mrs. J. W. Joffrion. The cashier of the same bank, J. E. Gremillion, and two merchants, E. A. Blanchard and J. M. Brouillette, were struck by falling fish as they walked toward their places of business about 7:45 a.m. There were spots on Main Street, in the vicinity of the bank (a half block from the restaurant) averaging one fish per square yard. Automobiles and trucks were running over them. Fish also fell on the roofs of houses.

They were freshwater fish native to local waters, and belonging to the following species: Large-mouth black bass (*Micropterus salmoides*), goggle-eye (*Chaenobryttus coronarius*), two species of sunfish (*Lepomis*), several species of minnows and hickory shad (*Pomolobus mediocris*). The latter species were the most common. I personally collected from Main Street and several yards on Monroe Street, a large jar of perfect specimens, and preserved them in Formalin, in order to distribute them among various museums. A local citizen who was struck by the fish told me that the fish were frozen; however, the specimens I collected, although cold, were not frozen. There is at least one record, in 1896 at Essen, Germany, of frozen fish falling from the sky. The largest fish in my collection was a large-mouth black bass 9¼ inches long. The largest falling fish on record was reported from India and weighed over six pounds.

The fish that fell in Marksville were absolutely fresh, and were fit for human consumption. The area in which they fell was approximately 1,000 feet long and about 75 or 80 feet wide, extending in a north-southerly direction, and was covered unevenly by fish. The actual falling of the fish occurred in somewhat short intervals, during foggy and comparatively calm weather. The velocity of the wind on the ground did not exceed eight miles per hour. The New Orleans weather bureau had no report of any large tornado, or updrift, in the vicinity of Marksville at that time. However, James Nelson Gowanloch, chief biologist for the Louisiana Department of Wild Life and Fisheries, and I had noticed the presence of numerous small tornadoes, or "devil dusters" the day before the "rain of fish" in Marksville. Fish rains have nearly always been described as being accompanied by violent thunderstorms and heavy rains. This, however, was not the case in Marksville.

Certainly occurrences of this nature are rare, and are not always reported, but nevertheless they are well known. The first mention of the phenomenon was made by Athanaseus in his *De pluvia piscium* nearly two thousand years ago, and E. W. Gudger, in his four collective articles, reports 78 cases of falling fish from the sky. There is no reason for anyone to devaluate the scientific evidence. Many people have never seen tornadoes, but they do not doubt them, and they accept the fact that wind can lift and carry heavy objects. Why can't fish be lifted with water and carried by the whirlwind?

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The Linda Hall Scientific Library, Kansas City, Missouri

Readers of scientific literature are watching with great satisfaction the impressive growth of the Linda Hall Library in Kansas City. This library, by agreement, is to be devoted exclusively to books and periodicals on science and technology. It should become the mecca for all scientific readers of the western central states.

The library was created eight years ago by an endowment in the will of Herbert F. Hall, a business leader of the vicinity. An estate of sixteen acres, four miles south of the business district of Kansas City and adjoining the campus of the University of Kansas City, was provided for the purpose. The library bears the name of the wife of Herbert F. Hall (both Mr. and Mrs. Hall are now deceased). The first books and periodicals were purchased three years ago.

The library is only a few blocks away from the Nelson Art Gallery, the Art Institute, and Rockhurst College. It will be near the grounds of the Midwest Research Institute when that organization moves to its new site in Kansas City.

Five trustees, appointed by Mr. Hall, decided that the new library should cover "the field of basic science and technology" and minister freely to the needs of "science scholars and research men." The library works in close cooperation with other libraries of Kansas City, and, under the terms of the will, it serves the scientific and technical book needs of the University of Kansas City faculty and student body. The University has transferred most of its books on science to the shelves of the Linda Hall Library and all science periodicals necessary to the science departments of the University are now provided by the Linda Hall Library.

Books and periodicals are coming in so rapidly that hardly any accurate statement can be made now on what

the library has to offer. A recent estimate places the number of bound volumes over 100,000. More than 2,200 current periodicals are now coming in by subscription and by gift. The collection covers such fields as those of the basic sciences and the industrial arts, and includes meteorology, building and construction, aeronautics, printing, mining and metallurgy, and radio.

The bound periodicals of many scientific academies and societies extend without interruption back to the 17th and 18th centuries. For some of the more recent sciences the sets are complete—for example, all of the United States Geological Survey publications are provided, and several sets of the State Geological Survey publications are nearly complete.

The reader may sit in a reading room of the library and have books brought to him by a library attendant from floors above and below or from the adjacent building. Or, in the periodical reading room, he may ask for any of the 2,200 files of periodicals, including the latest issues. The present full-time staff is eleven people, including four professional librarians.

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Atmospheric Pressure and Bird Flight

While the following observations have no direct bearing on the discussion of bird migration, they may contribute something as regards the effect of atmospheric pressure on bird flight.

In the fall of 1933 I was aboard a slow cargo ship on the great circle course, Lisbon to New York. A small West Indian hurricane had started north about the time we left Lisbon; it should have been entirely dissipated long before we "went over the hill." But the storm was also slow, and was still meandering up the coast when we reached the Newfoundland Banks. By calculation, it was due to strike inland at New York at the time we would be off Boston; our course was shifted to the eastward, to run well outside and ride in behind it.

This proved rather to be a collision course, for the storm recurved and followed the Long Island coast outward, with the result that we ran squarely into it off Nantucket, in a quadrant and at an angle which no navigator would deliberately have chosen. There was nothing then to be done but heave to and hope for the best; and, in due time, the storm center passed directly over us.

Any hurricane is a major disturbance, but fortunately this one was not of maximum area or intensity. It was, however, still intact and perfectly formed; the center, of course, was characterized by clear sky, absence of wind, and the confused seas piling one atop another from the four quadrants. The unexpected feature, however, was the fact that the center area was clearly defined by the presence of innumerable birds, land and shore birds of all sizes which had been sucked up and carried along, as helpless as if confined within a room except that the progressing storm forced them to keep in constant flight.

Starved, parched and exhausted, those that could sought refuge on the ship; rails, rigging and lifelines were covered with them; the decks were awash with drowned bundles of feathers. More than 30 kinds of birds were counted, including an owl. Many were taken inside and every effort was made to save them, but only one, a long-legged shore bird, survived.

The most pitiful case was that of a great black wild duck which tried desperately to beat its way to the ship from only a few yards off. Its "flight ceiling" was so low that its powerful wings could not raise it above the crest of the seas, which were about mast high. Three times we watched it fly straight into an oncoming sea, and emerge, still "flying" from the other side; the fourth time it did not reappear.

Whether pressure and other atmospheric factors accounted for the low flight that caused this one and so many others to drown, or whether it was weakness alone, I do not know. It was certainly the pressure system that placed them in this tragic situation. This example would seem to be the reverse of that cited by C. Suffern of England, whose redwings were carried along the *outer edge* of the pressure system, presumably on the wind. These were in the wind-free center, but were carried out to sea because they could not break through the walls of wind. It was curious that there were no sea birds among them; yet the storm, although it had hugged the coast, had not gone inland at any point. Evidently they had been picked up by the fringe winds and blown into the center, much as the seas were dragged in. Since it was entirely involuntary on the part of the birds, this mass displacement could not, of course, be considered a migration; but it might be assumed that migratory birds would attempt to avoid such pressure systems.

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On the High Prices of Scientific Books

This is in the nature of a protest against the present high prices of scientific books. In recent years the cost of books has doubled and tripled until it is now virtually impossible for many scientific workers to own volumes they need and this is to say nothing of the poor student, who has to struggle to pay for texts that are absolutely essential.

In my opinion, a personal library, however small it might be, is an inestimable aid to a student in gaining and *retaining* a grasp of his subject. The present situation forces many to sell their current texts to pay for the ones needed in the following semester.

The prices of many articles are falling, and we can only hope that books will follow suit. As a remedial measure, might I suggest the European procedure, whereby books are issued in both unbound and bound form. This would reduce the price of many books by about 25 percent. I see no reason for paying $4.00 for a 147-page book—the price asked for a recent publication.

JOHN R. LOWRY

General Foods Corporation,
Hoboken, N. J.